

SUBCHAPTER O—CERTAIN BULK DANGEROUS CARGOES

PART 150—COMPATIBILITY OF CARGOES

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AUTHORITY: 46 U.S.C. 3306, 3703; 49 CFR 1.45, 1.46. Section 150.105 issued under 44 U.S.C. 3507; 49 CFR 1.45.

SOURCE: CGD 75-59, 45 FR 70263, Oct. 23, 1980, unless otherwise noted.

§ 150.105 OMB control numbers assigned pursuant to the Paperwork Reduction Act.

(a) *Purpose.* This section collects and displays the control numbers assigned to information collection and record-keeping requirements in this subchapter by the Office of Management and Budget (OMB) pursuant to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). The Coast Guard intends that this section comply with the requirements of 44 U.S.C. 3507(f) which requires that agencies display a current control number assigned by the Director of the OMB for each approved agency information collection requirement.

(b) *Display.*

46 CFR part or section where identified or described	Current OMB control No.
§ 150.01-15	2115-0016

46 CFR part or section where identified or described	Current OMB control No.
§ 153.5	2115-0016
§ 153.905	2115-0089
§ 153.910	2115-0089
§ 153.968	2115-0089
Part 154	2115-0113
§ 154.12	2115-0016

[49 FR 38121, Sept. 27, 1984, as amended by CGD 77-069, 52 FR 31626, Aug. 21, 1987]

§ 150.110 Applicability.

This subpart prescribes rules for identifying incompatible hazardous materials and rules for carrying these materials in bulk as cargo in permanently attached tanks or in tanks that are loaded or discharged while aboard the vessel. The rules apply to all vessels that carry liquid dangerous cargoes in bulk that are subject to 46 U.S.C. Chapter 37.

[CGD 95-028, 62 FR 51209, Sept. 30, 1997]

§ 150.115 Definitions.

As used in this subpart: *Hazardous material* means:

- (a) A flammable liquid as defined in § 30.10-22 or a combustible liquid as defined in § 30.10-15 of this chapter;
(b) A material listed in Table 151.05, Table 1 of part 153, or Table 4 of part 154 of this chapter; or
(c) A liquid, liquefied gas, or compressed gas listed in 49 CFR 172.101.

Person in charge means the master of a self-propelled vessel, or the person in charge of a barge.

§ 150.120 Definition of incompatible cargoes.

Except as described in § 150.150, a cargo of hazardous material is incompatible with another cargo listed in Table I if the chemical groups of the two cargoes have an “X” where their columns intersect in Figure 1 and are not shown as exceptions in Appendix I. (See also § 150.140.)

[CGD 83-047, 50 FR 33038, Aug. 16, 1985]

§ 150.130

§ 150.130 Loading a cargo on vessels carrying cargoes with which it is incompatible.

Except as described in § 150.160, the person in charge of a vessel shall ensure that the containment system for a cargo that is a hazardous material meets the following requirements:

(a) The containment system must separate the hazardous material or its residue from any cargo in table I with which it is incompatible by two barriers such as formed by a:

- (1) Cofferdam;
- (2) Empty tank;
- (3) Void space;
- (4) Cargo handling space;
- (5) Tank containing a compatible cargo; or

(6) Piping tunnel.

(b) In this subpart, isolation across a cruciform joint is equivalent to isolation by two barriers.

(c) The containment system for the hazardous material must not have a piping or venting system that connects to a containment system carrying a cargo with which the hazardous material is incompatible. Any such piping or venting system must have been separated from the containment system carrying the incompatible cargo by:

(1) Removing a valve or spool piece and blanking off the exposed pipe ends, or

(2) Installing two spectacle flanges in series with a means of detecting leakage into the pipe between the spectacle flanges.

§ 150.140 Cargoes not listed in Table I or II.

A cargo of hazardous material not listed in Table I or II must be handled as if incompatible with all other cargoes until the Commandant (G-MSO) (tel. no. (202) 267-1577) assigns the hazardous material to a compatibility group. (Table I lists cargoes alphabetically while Table II lists cargoes by compatibility group).

[CGD 83-047, 50 FR 33038, Aug. 16, 1985, CGD 86-100, 52 FR 21037, June 4, 1987; CGD 95-072, 60 FR 50465, Sept. 29, 1995; CGD 96-041, 61 FR 50731, Sept. 27, 1996]

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§ 150.150 Exceptions to the compatibility chart.

The Commandant (G-MSO) authorizes, on a case by case basis, exceptions to the rules in this subpart under the following conditions:

(a) When two cargoes shown to be incompatible in Figure 1 meet the standards for a compatible pair in Appendix III, or

(b) When two cargoes shown to be compatible in Figure 1 meet the standards for an incompatible pair in Appendix III.

Appendix I contains cargoes which have been found to be exceptions to Figure 1, the Compatibility Chart.

[CGD 83-047, 50 FR 33038, Aug. 16, 1985, as amended at CGD 95-072, 60 FR 50465, Sept. 29, 1995; CGD 96-041, 61 FR 50731, Sept. 27, 1996]

§ 150.160 Carrying a cargo as an exception to the compatibility chart.

The Operator of a vessel having on board a cargo carried as an exception under § 150.150 but not listed in Appendix I, Exceptions to the Chart, shall make sure that:

(a) The Commandant (G-MSO) has authorized by letter or message the cargo pair as an exception to the compatibility chart; and

(b) A copy of the letter or message is on the vessel.

[CGD 75-59, 45 FR 70263, Oct. 23, 1980, as amended by CGD 82-063b, 48 FR 4781, Feb. 3, 1983; CGD 83-047, 50 FR 33038, Aug. 16, 1985; CGD 95-072, 60 FR 50465, Sept. 29, 1995; CGD 96-041, 61 FR 50731, Sept. 27, 1996]

§ 150.170 Right of appeal.

Any person directly affected by a decision or action taken under this part, by or on behalf of the Coast Guard, may appeal therefrom in accordance with subpart 1.03 of this chapter.

[CGD 88-033, 54 FR 50381, Dec. 6, 1989]

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Figure 1 - Compatibility chart

CARGO COMPATIBILITY		REACTIVE GROUPS																					
CARGO GROUPS		1. NON-OXIDIZING MINERAL ACIDS	2. SULFURIC ACID	3. NITRIC ACID	4. ORGANIC ACIDS	5. CAUSTICS	6. AMMONIA	7. ALIPHATIC AMINES	8. ALKANOLAMINES	9. AROMATIC AMINES	10. AMIDES	11. ORGANIC ANHYDRIDES	12. ISOCYANATES	13. VINYL ACETATE	14. ACRYLATES	15. SUBSTITUTED ALLYLS	16. ALKYLENE OXIDES	17. EPICHLOROHYDRIN	18. KETONES	19. ALDEHYDES	20. ALCOHOLS, GLYCOLS	21. PHENOLS, CRESOLS	22. CAPROLACTAM SOLUTION
1. NON-OXIDIZING MINERAL ACIDS		X																					
2. SULFURIC ACID	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1	
3. NITRIC ACID	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2	
4. ORGANIC ACIDS	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	3	
5. CAUSTICS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	4	
6. AMMONIA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	5	
7. ALIPHATIC AMINES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	6	
8. ALKANOLAMINES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	7	
9. AROMATIC AMINES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8	
10. AMIDES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	9	
11. ORGANIC ANHYDRIDES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10	
12. ISOCYANATES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	11	
13. VINYL ACETATE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	12	
14. ACRYLATES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	13	
15. SUBSTITUTED ALLYLS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14	
16. ALKYLENE OXIDES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15	
17. EPICHLOROHYDRIN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	16	
18. KETONES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	17	
19. ALDEHYDES	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	18	
20. ALCOHOLS, GLYCOLS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	19	
21. PHENOLS, CRESOLS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	20	
22. CAPROLACTAM SOLUTION	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	21	
30. OLEFINS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	30	
31. PARAFFINS																						31	
32. AROMATIC HYDROCARBONS																						32	
33. MISCELLANEOUS HYDROCARBON MIXTURES																						33	
34. ESTERS																						34	
35. VINYL HALIDES																						35	
36. HALOGENATED HYDROCARBONS																						36	
37. NITRILES																						37	
38. CARBON DISULFIDE																						38	
39. SULFOLANE																						39	
40. GLYCOL ETHERS																						40	
41. ETHERS																						41	
42. NITROCOMPOUNDS																						42	
43. MISCELLANEOUS WATER SOLUTIONS																						43	

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TABLE I—ALPHABETICAL LIST OF CARGOES

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Acetaldehyde	19	AAD	
Acetic acid	24	AAC	
Acetic anhydride	11	ACA	
Acetone	218	ACT	
Acetone cyanohydrin	1,20	ACY	
Acetonitrile	37	ATN	
Acetophenone	18	ACP	
Acrolein	219	ARL	
Acrylamide solution	10	AAM	
Acrylic acid	24	ACR	
Acrylonitrile	215	ACN	
Acrylonitrile-Styrene copolymer dispersion in Polyether polyol	20	ALE	
Adiponitrile	37	ADN	
Alachlor technical	33	ALH	
•Alcohols (C13+)	20	ALY	TDN/TTN/PDC/TFA
Alcohol beverages	20		APU/APV/APW(APK/APL)
•Alcohol polyethoxylates	20		AEA/AEB
Alcohol polyethoxylates, secondary	31	ALK	HXS/HMX/OAX/NAX
Alkanes (C6-C9)	31		DCC/DOC/TRD/ALJ
n-Alkanes (C10+)	31		
iso- & cyclo-Alkanes (C10-C11)	31		
iso- & cyclo-Alkanes (C12+)	31		
Alkane (C14-C17) sulfonic acid, sodium salt solution	34	AKA	
Alkaryl polyether (C9-C20)	41	AKP	
Alkenyl(C11+amide)	11	AKM	
Alkenylsuccinic anhydride	11	AAH	
Alkyl acrylate-Vinyl pyridine copolymer in Toluene	32	AAP	
Alkyl(C8+)amine, Alkenyl (C12+) acid ester mixture	34	AAA	
Alkyl(C3-C4)benzenes	32	AKC	PBY/BBE
Alkyl(C5-C8)benzenes	32	AKD	
•Alkyl(C9+)benzenes	32	AKB	DBZ/UDB/DDB/TRB/ TDB
•Alkylbenzene, Alkyldiante, Alkyldiene mixture (each C12-C17)	32	AIH	
Alkylbenzenesulfonic acid	1,20	ABS	
Alkylbenzenesulfonic acid, sodium salt solutions	33	ABT	
Alkyl dithiothiadiazole (C6-C24)	33	ADT	
Alkyl ester copolymer (C6-C18)	34	AES	
Alkyl(C7-C9) nitrates	234	AKN	ONE
Alkyl phenol sulfide (C8-C40)	34	AKS	
Alkyl phthalates	34		
Allyl alcohol	215	ALA	
Allyl chloride	15	ALC	
Aluminum chloride, Hydrochloric acid solution	0	AHS	
Aluminum sulfate solution	243	ASX	ALM
2-(2-Aminoethoxy)ethanol	8	AEX	
Aminoethylidethanolamine, Aminoethylidethanolamine solution	8		
Aminoethylidethanolamine	8	SEE	
N-Aminoethylpiperazine	7	AEP	
2-Amino-2-hydroxymethyl-1,3-propanediol solution	43	AHL	
2-Amino-2-methyl-1-propanol	8	APR	
Ammonia, anhydrous	6	AMA	
Ammonia, aqueous, see Ammonium hydroxide	6		AMH
Ammonium bisulfite solution	243	ABX	ASU
•Ammonium hydrogen phosphate solution	0	AMI	
Ammonium hydroxide (28% or less Ammonia)	6	AMH	
Ammonium nitrate solution	10	ANR	AMN
Ammonium nitrate, Urea solution (containing Ammonia)	6	UAS	
•Ammonium nitrate, Urea solution (not containing Ammonia)	43	ANU	UAT
•Ammonium polyphosphate solution	43	AMO	APP
Ammonium sulfate solution	43	AME	AMS
Ammonium sulfide solution	5	ASS	ASF
Ammonium thiocyanate, Ammonium thiosulfate solution	0	ACS	
Ammonium thiosulfate solution	43	ATV	ATF
Amyl acetate	34	AEC	IAT/AML/AAS/AYA
Amyl alcohol	20	AAI	IAA/AAN/ASE/APM
•Amylene, see Pentene	30	AMZ	PTX
•Amyl methyl ketone, see Methyl amyl ketone	18	AMK	MAK
Aniline	9	ANL	
Animal and Fish oils, n.o.s.	34	AFN	
Animal and Fish acid oils and distillates, n.o.s.	34	AFA	

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TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Anthracene oil (Coal tar fraction), see Coal tar	33	AHO	COR
Apple juice	43		
Aryl polyolefin (C11–C50)	30	AYF	
Asphalt	33	ASP	ACU
Asphalt blending stocks, roofers flux	33	ARF	
Asphalt blending stocks, straight run residue	33	ASR	
Aviation alkylates	33	AVA	GAV
Barium long chain alkaryl sulfonate (C11–C50)	34	BCA	
Barium long chain alkyl(C8–C14)phenate sulfide	34	BCH	
Behenyl alcohol	20		
Benzene	32	BNZ	
Benzene hydrocarbon mixtures (having 10% Benzene or more)	32	BHB	
Benzenesulfonyl chloride	1,2,0	BSC	
Benzene, Toluene, Xylene mixtures	32	BTX	
Benzene tricarboxylic acid, triethyl ester	34	BZE	
Benzylacetate	34	BAL	
Benzyl alcohol	21	BCL	
Benzyl chloride	36	BFX	
Brake fluid base mixtures	20	BDI	
Butadiene	30	BBM	
Butadiene, Butylene mixtures (cont. Acetylenes)	31	BMX	IBT/BUT
Butane	30		IBL/BTN
Butene, see Butylene			
Butene oligomer	30	BOL	
Butyl acetate	34	BAX	IBA/BCN/BTA/BYA
Butyl acrylate	14	BAR	BAI/BTC
Butyl alcohol	2,20		IAL/BAN/BAS/BAT
Butylamine	7	BTY	IAM/BAM/BTL/BUA
Butylbenzene	32	BBE	
Butyl benzyl phthalate	34	BPH	
Butyl butyrate	34	BBA	BUB/BIB
Butylene	30	BTN	IBL
Butylene glycol	2,20	BUG	
Butylene oxide	16	BTO	
Butyl ether	41	BTE	
Butyl formate	34		BFI/BFN
Butyl heptyl ketone	18	BHK	
Butyl methacrylate	14	BMH	BMI/BMN
Butyl methacrylate, Decyl methacrylate, Cetyl-Eicosyl methacrylate mixture	14	DER	
Butyl phenol, Formaldehyde resin in Xylene	32		
n-Butyl propionate	34	BPN	
Butyl stearate	34		
Butyl toluene	32	BUE	
Butyraldehyde	19	BAE	BAD/BTR/BFA
Butyric acid	4	BRA	IBR
gamma-Butyrolactone	1,2,0	BLA	
Calcium alkyl(C9)phenol sulfide, polyolefin phosphorosulfide mixture	34	CPX	
Calcium bromide solution see Drilling brines	43		DRB
Calcium bromide, Zinc bromide solution, see Drilling brine (containing Zinc salts)	43		DZB
Calcium carbonate slurry	34		
Calcium chloride solution	43	CCS	CLC
Calcium hydroxide slurry	5	COH	
Calcium hypochlorite solutions	5		CHZ/CHU/CHY
Calcium long chain alkaryl sulfonate (C11–C50)	34	CAY	
Calcium long chain alkyl phenate (C8–C40)	34	CAN	
Calcium long chain alkyl phenate sulfide (C8–C40)	34	CPI	
Calcium long chain alkyl salicylate (C13+)	34	CAK	
Calcium long chain alkyl phenolic amine (C8–C40)	7		
Calcium nitrate, Magnesium nitrate, Potassium chloride solution	34		
Calcium sulfonate, Calcium carbonate, Hydrocarbon solvent mixture	33		
Camphor oil	18	CPO	
Caprolactam solution	22	CLS	
Carbolic oil	21	CBO	
Carbon disulfide	38	CBB	
Carbon tetrachloride	36	CBT	
Cashew nut shell oil (untreated)	4	OCN	
Caustic potash solution	2,5	CPS	
Caustic soda solution	2,5	CSS	
Cetyl-Eicosyl methacrylate mixture	14	CEM	
Cetyl-Stearyl alcohol	20		
Chlorinated paraffins (C10–C13)	36	CLH	

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TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Chlorinated paraffins (C14–C17)	36		
Chlorine	10	CLX	
Chloroacetic acid solution	4	CHM	CHL/MCA
Chlorobenzene	36	CRB	
Chlorodifluoromethane	36	MCF	
Chloroform	36	CRF	
Chlorhydrins	17	CHD	
4-Chloro-2-methylphenoxyacetic acid, Dimethylamine salt solution	9	CDM	
•Chloronitrobenzene	42	CNO	
Chloropropionic acid	4	CPM	CLA/CLP
Chlorosulfonic acid	10	CSA	
Chlorotoluene	36	CHI	CTM/CTO/CRN
Choline chloride solutions	20	CCO	
Citric acid	4	CIS	CIT
Clay slurry, <i>see also</i> Kaolin clay slurry	43		
Coal tar	33	COR	OCT
Coal tar pitch	33	CTP	
Cobalt naphthenate in solvent naphtha	34	CNS	
Coconut oil, fatty acid	34	CFA	
Corn syrup	43	CSY	
Cottonseed oil, fatty acid	34	CFY	
Creosote	221	CCT	CCW/CWD
Cresols	21	CRS	CRL/CSL/CSO
Cresylate spent caustic	5	CSC	
Cresylic acid	21	CRY	
Cresylic acid, dephenolized	21	CAD	CSC
Cresylic acid, sodium salt solution, <i>see</i> Cresylate spent caustic	5		
Cresylic acid tar	21	CRX	
Crotonaldehyde	219	CTA	
Cumene(<i>isopropyl benzene</i>), <i>see</i> Propylbenzene	32	CUM	PBY
1,5,9-Cyclododecatriene	30	CYT	
Cycloheptane	31	CYE	
Cyclohexane	31	CHX	
Cyclohexanol	20	CHN	
Cyclohexanone	18	CCH	
Cyclohexanone, Cyclohexanol mixtures	218	CYX	
Cyclohexyl acetate	34	CYC	
Cyclohexylamine	7	CHA	
•1,3-Cyclopentadiene dimer	30	CPD	DPT
Cyclopentane	31	CYP	
Cyclopentene	30	CPE	
Cymene	32	CMP	
Decahydronaphthalene	33	DHN	
Decaldehyde	19		IDA/DAL
•Decane, <i>see</i> n-Alkanes (C10+)	31	DCC	ALJ
Decanoic acid	4	DCO	
Decene	30	DCE	
Decyl acetate	34	DYA	
Decyl acrylate	14	DAT	IAI/DAR
Decyl alcohol	20	DAX	ISA/DAN
Decylbenzene	32	DBZ	AKB
Decyloxytetrahydro-thiophene dioxide	20	DHT	
Dextrose solution	43	DTS	
Diacetone alcohol	220	DAA	
Dialkyl(C10–C14) benzenes	32	DAB	
•Dialkyl(C7–C13) phthalates	34	DAH	DHP/DIE/DOP/DIF/ DTP/DUP/DID/DIN/ DIO/EHE
Dibutylamine	7	DBA	
Dibutyl hydrogen phosphonate	34	DHD	
Dibutyl phthalate	34	DPA	
Dichlorobenzene	36	DBX	DBM/DBO/DBP
Dichlorodifluoromethane	36	DCF	
1,1-Dichloroethane	36	DCH	
2,2'-Dichloroethyl ether	41	DEE	
1,6-Dichlorohexane	36	DHX	
2,2'-Dichloroisopropyl ether	36	DCI	
Dichlormethane	36	DCM	
2,4-Dichlorophenol	21	DCP	
2,4-Dichlorophenoxyacetic acid, Diethanolamine salt solution	43	DDE	
2,4-Dichlorophenoxyacetic acid, Dimethylamine salt solution	1,20	DAD	DDA/DSX

TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
2,4-Dichlorophenoxyacetic acid, Trisopropanolamine salt solution	243	DTI	
Dichloropropane	36	DPX	DPB/DPP/DPC/DPL
1,3-Dichloropropene	15	DPS	DPU/DPF
Dichloropropene, Dichloropropane mixtures	15	DMX	
2,2-Dichloropropionic acid	4	DCN	
•Dicyclopentadiene, <i>see</i> 1,3-Cyclopentadiene dimer	30	DPT	CPD
Diethanolamine	8	DEA	
Diethanolamine salt of 2,4-Dichlorophenoxyacetic acid solution	43	DDE	
Diethylamine	7	DEN	
Diethylaminoethanol, <i>see</i> Diethylethanolamine	8	DAE	
2,6-Diethylaniline	9	DMN	
Diethylbenzene	32	DEB	
Diethylene glycol	240	DEG	
Diethylene glycol butyl ether, <i>see</i> Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	40	DME	PAG
Diethylene glycol butyl ether acetate, <i>see</i> Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether acetate	34	DEM	PAF
Diethylene glycol dibutyl ether	40	DIG	
Diethylene glycol diethyl ether	40	DGE	PAG
Diethylene glycol ethyl ether, <i>see</i> Poly(2-8)alkylene glycol monoalkyl (C1-C6) ether	34	DGA	PAF
•Diethylene glycol ethyl ether acetate, <i>see</i> Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether acetates	40	DHE	PAG
Diethylene glycol n-hexyl ether, <i>see</i> Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	40	DGM	PAG
•Diethylene glycol methyl ether, <i>see</i> Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	34	DGR	PAF
Diethylene glycol methyl ether acetate, <i>see</i> Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether acetate	40	DGP	
Diethylene glycol phenyl ether	34	DGL	
Diethylene glycol phthalate	40	DGO	PAG
Diethylene glycol propyl ether, <i>see</i> Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	27	DET	
Diethylenetriamine	43		
Diethylenetriamine pentaacetic acid, pentasodium salt solution	8	DAE	
Diethylethanolamine	41	EET	
Diethyl ether, <i>see</i> Ethyl ether	34	DEH	
Di-(2-ethylhexyl)adipate	1	DEP	
Di-(2-ethylhexyl)phosphoric acid	34	DIE	DAH/DDIO/DOP/DAH
•Di-(2-ethylhexyl)phthalate, <i>see</i> Dialkyl(C7-C13) phthalates	34	DPH	
Diethyl phthalate	34	DSU	
Diethyl sulfate	41	BDE	BPA
Diglycidyl ether of Bisphenol A	41	DGF	
Diglycidyl ether of Bisphenol F	34	DHP	
Dihexyl phthalate	34	DHA	
Di-n-hexyl adipate	34		
Dihexyl phthalate	5	DDH	
1,4-Dihydro-9,10-dihydroxy anthracene, disodium salt solution	7	DBU	
Diisobutylamine	20	DBC	NNS
•Diisobutyl carbinol, <i>see</i> Nonyl alcohol	30	DBL	
Diisobutylene	18	DIK	
Diisobutyl ketone	34	DIT	
Diisobutyl phthalate	34	DID	DAH
•Diisodecyl phthalate, <i>see</i> Dialkyl(C7-C13) phthalates	34	DNY	
Diisononyl adipate	34	DIN	DAH
•Diisonoxy phthalate, <i>see</i> Dialkyl(C7-C13) phthalates	34	DIO	
Diisooctyl phthalate	8	DIP	
Disopropanolamine	7	DIA	
Disopropylamine	32	DIX	
Disopropylbenzene	32	DII	
Disopropyl naphthalene	10	DAC	
N,N-Dimethylacetamide	10	DLS	
N,N-Dimethylacetamide solution	34	DLA	
Dimethyl adipate	7	DMA	
Dimethylamine	7		DMG/DMY/DMC
Dimethylamine solution	9	CDM	
Dimethylamine salt of 4-Chloro-2-methylphenoxyacetic acid solution	1,20	DAD	DDA/DSX
Dimethylamine salt of 2,4-Dichlorophenoxyacetic acid solution	9	DMM	
2,6-Dimethylaniline	34		
Dimethylcyclicsiloxane hydrolyzate	7	DXN	
N,N-Dimethylcyclohexylamine	8	DMB	
Dimethylethanolamine	10	DMF	
Dimethylformamide	41		
Dimethyl furan			

TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Dimethyl glutarate	34	DGT	
Dimethyl hydrogen phosphite	234	DPI	
Dimethyl naphthalene sulfonic acid, sodium salt solution	234	DNS	
Dimethyloctanoic acid	4	DMO	
Dimethyl phthalate	34	DTL	
Dimethylpolysiloxane	34	DMP	
2,2-Dimethylpropane-1,3-diol	20	DDI	
Dimethyl succinate	34	DSE	
Dinitrotoluene	42	DNM	DTT/DNL/DNU
•Dinonyl phthalate, <i>see</i> Dialkyl(C7–C13) phthalates	34	DIF	DAH
•Diethyl phthalate, <i>see</i> Dialkyl(C7–C13) phthalates	34	DOP	DAH
1,4-Dioxane	41	DOX	
Dipentene	30	DPN	
Diphenyl	32	DIL	
Diphenylamines, alkylated	7	DAJ	
Diphenylamine, reaction product with 2,2,4-trimethylpentene	7	DAK	
Diphenyl, Diphenyl ether mixture	33	DDO	DTH
Diphenyl ether	41	DPE	
Diphenyl ether, Diphenyl phenyl ether mixture	41	DOB	
Diphenylmethane diisocyanate	12	DPM	
Diphenylol propane-Epichlorohydrin resins	10	DPR	
Di-n-propylamine	7	DNA	
Dipropylene glycol	40	DPG	
Dipropylene glycol butyl ether, <i>see</i> Poly(2–8)alkylene glycol monoalkyl(C1–C6) ether	40	DBG	PAG
Dipropylene glycol dibenzoate	34	DGY	
Dipropylene glycol methyl ether, <i>see</i> Poly (2–8)alkylene glycol monoalkyl(C1–C6) ether.	40	DPY	PAG
Distillates, flashed feed stocks	33	DFF	
Distillates, straight run	33	DSR	
•Ditridecyl phthalate, <i>see</i> Dialkyl(C7–C13) phthalates	34	DTP	DAH
•Diundecyl phthalate, <i>see</i> Dialkyl(C7–C13) phthalates	34	DUP	DAH
Dodecane	31	DOC	PFN
Dodecanol	20	DDN	LAL
Dodecene	30	DOZ	DDC/DOD
2-Dodecenoysuccinic acid, dipotassium salt solution	34	DSP	DDN
•Dodecyl alcohol, <i>see</i> Dodecanol	27	DTA	
Dodecyldiamine, Tetradecyldiamine mixture	32	DDB	AKB
Dodecylbenzene	20	DSA	
Dodecylbenzenesulfonic acid	7	DOT	
Dodecyldimethylamine, Tetradecyldimethylamine mixture	43	DOS	
Dodecyl diphenyl ether disulfonate solution	20	DOH	
Dodecyl hydroxypropyl sulfide	14	DDM	
Dodecyl methacrylate	14	DDP	
Dodecyl-Pentadecyl methacrylate mixtures	21	DOL	
Dodecyl phenol	32	DXY	
Dodecyl xylene	43	DRB	
Drilling brine (containing Calcium, Potassium or Sodium salts)	43	DZB	
Drilling brine (containing Zinc salts)	33	DRM	
Drilling mud (low toxicity) (<i>if</i> flammable or combustible)	43	DRM	
Drilling mud (low toxicity) (<i>if</i> non-flammable or non-combustible)	17	EPC	
Epichlorohydrin	18	ETH	
Epoxy resin	31	MEA	
Ethane	8	EEO	ECC/ECE
Ethanolamine	40	EEA	
*2-Ethoxyethanol, <i>see</i> Ethylene glycol monoalkyl ethers	20	APU/APV/APW (EOD/ENP/EOP/EOT/ ETD)	
2-Ethoxyethyl acetate	40	ETG	
•Ethoxylated alcohols, C11–C15, <i>see</i> the alcohol polyethoxylates	34	ETA	
Ethoxy triglycol	34	EAA	
Ethyl acetate	34	EAC	
Ethyl acetoacetate	14	EAL	
Ethyl acrylate	220	EAM	
Ethyl alcohol	7	EAN	
Ethylamine	18	EAK	ELK
Ethylamine solution	32	ETB	
Ethyl amyl ketone	20	EBT	
Ethylbenzene	7	EBA	
Ethyl butanol	34	EBR	
N-Ethyl-n-butylamine			
Ethyl butyrate			

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TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Ethyl chloride	36	ECL	
Ethyl cyclohexane	31	ECY	
N-Ethylcyclohexylamine	7	ECC	
Ethylene	30	ETL	
Ethylene carbonate	34		
Ethylene chlorohydrin	20	ECH	
Ethylene cyanohydrin	20	ETC	
Ethylenediamine	27	EDA	EMX
Ethylenediaminetetraacetic acid, tetrasodium salt solution	43	EDS	
Ethylene dibromide	36	EDB	
Ethylene dichloride	236	EDC	
Ethylene glycol	220	EGL	
Ethylene glycol acetate	34	EGO	
Ethylene glycol butyl ether, <i>see</i> Ethylene glycol monoalkyl ethers	40	EGM	EGC
Ethylene glycol tert-butyl ether, <i>see</i> Ethylene glycol monoalkyl ethers	40		EGC
Ethylene glycol butyl ether acetate	34	EMA	
Ethylene glycol diacetate	34	EGY	
Ethylene glycol dibutyl ether	40	EBG	
•Ethylene glycol ethyl ether, <i>see</i> Ethyl glycol monoalkyl ethers	40	EGE	EGC/EEO
Ethylene glycol ethyl ether acetate, <i>see</i> 2-Ethoxyethyl acetate	34	EGA	EEA
Ethylene glycol hexyl ether	40	EGH	
Ethylene glycol isopropyl ether, <i>see</i> Ethylene glycol monoalkyl ethers	40	EGI	EGC
Ethylene glycol methyl butyl ether	40	EMB	
Ethylene glycol methyl ether, <i>see</i> Ethylene glycol monoalkyl ethers	40	EME	EGC
Ethylene glycol methyl ether acetate	34	EGT	
Ethylene glycol monoalkyl ethers	40	EGC	
Ethylene glycol phenyl ether	40	EPE	
Ethylene glycol phenyl ether, Diethylene glycol phenyl ether mixture	40	EDX	
Ethylene glycol propyl ether, <i>see</i> Ethylene glycol momalkyl ethers	40	EGP	EGC
Ethylene oxide	10	EOX	
Ethylene oxide, Propylene oxide mixture	16	EPM	
Ethylene-Propylene copolymer	30		
Ethylene-Vinyl acetate copolymer emulsion	43		
Ethyl ether	41	EET	
Ethyl-3-ethoxypropionate	34	EEP	
•2-Ethylhexaldehyde, <i>see</i> Octyl aldehydes	19	EHA	OAL
•2-Ethylhexanoic acid, <i>see</i> Octanoic acids	4	EHO	OAY
•2-Ethylhexanol, <i>see</i> Octanol	20	EHX	OCX
2-Ethylhexyl acrylate	14	EAI	
2-Ethylhexylamine	7	EHM	
Ethyl hexyl phthalate	34	EHE	
•Ethyl hexyl tallate	34	EHT	
2-Ethyl-1-(hydroxymethyl)propane-1,3-diol, C8-C10 ester	34	EHD	
Ethyldene norbornene	230	ENB	
Ethyl methacrylate	14	ETM	
2-Ethyl-6-methyl-N-(1'-methyl-2-methoxyethyl)aniline	9	EEM	
o-Ethyl phenol	21	EPL	
Ethyl propionate	34	EPR	
2-Ethyl-3-propylacrolein	219	EPA	
Ethyl toluene	32	ETE	
•Fatty acids (saturated, C13+)	34	FAD	SRA
Ferric chloride solution	1	FCS	FCL
Ferric hydroxyethylenediaminetriacetic acid, trisodium salt solution	243	FHX	STA
Ferric nitrate, Nitric acid solution	3	FNN	
Fish solubles (<i>water based fish meal extracts</i>)	43	FSO	
Fluorosilicic acid	1	FSJ	
Formaldehyde, Methanol mixtures	219	MTM	
Formaldehyde solution	219	FMS	
Formamide	10	FAM	
Formic acid	24	FMA	
Fructose solution	43		
Fumaric adduct of Rosin, water dispersion	43	FAR	
Furfural	19	FFA	
Furfuryl alcohol	220	FAL	
Gas oil, cracked	33	GOC	
Gasoline blending stock, alkylates	33	GAK	
Gasoline blending stock, reformates	33	GRF	
Gasolines:			
Automotive (<i>not over 4.23 grams lead per gal.</i>)	33	GAT	
Aviation (<i>not over 4.86 grams lead per gal.</i>)	33	GAV	AVA
Casinghead (<i>natural</i>)	33	GCS	

TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Polymer	33	GPL	
Straight run	33	GSR	
Glucose solution	43		
Glutaraldehyde solution	19	GTA	
Glycerine	20	GCR	
Glycerine, Dioxanedimethanol mixture	20	GDM	
Glycerol monooleate	20	GMO	
Glycerol polyalkoxylate	34		
Glycerol triacetate	34		
Glycidyl ester of C10 trialkyl acetic acid, see Glycidyl ester of tridecyl acetic acid	34	GLT	
Glycidyl ester of tridecylacetic acid	34		
•Glycidyl ester of Versatic acid, see Glycidyl ester of tridecylacetic acid	34		
Glycine, sodium salt solution	7		
Glycol diacetate	34		
Glyoxal solutions	19	GOS	
Glyoxylic acid	4	GAC	
Heptane	31	HMX	HPI/HPT
n-Heptanoic acid	4	HEP	
Heptanol	20	HTX	HTN
Heptene	30	HPX	HTE
Heptyl acetate	34	HPE	
•Herbicide (C15-H22-NO2-Cl), see Metolachlor	MCO	
Hexaethylene glycol, see Polyethylene glycol	40		
Hexamethylene glycol	20		
Hexamethylenediamine adipate solution	43	HAM	
Hexamethylenediamine solution	7	HMC	HMD
Hexamethylenetetramine	7	HMT	
Hexamethylenetetramine solutions	7	HTS	
Hexamethylenimine	7	HMI	
Hexane	231	HXS	IHA/HXA
Hexanoic acid	4	HXO	
Hexanol	20	HXN	
•Hexene	30	HEX	HXE/HXT/MPN/MTN
Hexyl acetate	34	HAE	HSA
Hexylene glycol	20	HGX	
Hydrochloric acid	1	HCL	
•Hydrofluorosilicic acid, see Fluorosilicic acid	1	HFS	FSJ
Hydrogen peroxide solutions	10		HPN/HPS/HPO
2-Hydroxyethyl acrylate	120	HAI	
N-(Hydroxyethyl)ethylenediaminetriacetic acid, trisodium salt solution	43	HET	
2-Hydroxy-4-(methylthio)butanoic acid	4	HBA	
Hydroxy terminated polybutadiene, see polybutadiene, hydroxyl terminated	20		
Isophorone	218	IPH	
Isophorone diamine	7	IPI	
Isophorone disocyanate	12	IPD	
Isoprene	30	IPR	
Isopropylbenzene (<i>cumene</i>), see Propylbenzene	32	CUM	PBY/CUM
Jet fuels:			
JP-4	33	JPF	
JP-5	33	JPV	
JP-8	33	JPE	
Kaolin clay slurry	43		
Kerosene	33	KRS	
Ketone residue	18		
Kraft black liquor	5		KPL
Kraft pulping liquors (<i>Black, Green, or White</i>)	5	KPL	
Lactic acid	20	LTA	
Lactonitrile solution	37	LNI	
Lard	34		
Latex (ammonia inhibited)	30	LTX	
Latex, liquid synthetic	43	LLS	LTX
Lauric acid	34	LRA	
Lauryl polyglucose (50% or less)	20	LAP	
Lecithin (<i>soyabean</i>)	34	LEC	
Lignin liquor	43		
Liquid Streptomyces solubles	43		
Long chain alkaryl polyether (C11-C20)	41	LCP	
Long chain alkaryl sulfonic acid (C16-C60)	20	LCS	
Long chain alkylphenate/Phenol sulfide mixture	21		
Long chain polyetheramine in alkyl(C2-C4)benzenes	7	LCE	
Magnesium chloride solution	120		

Coast Guard, DOT

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TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Magnesium hydroxide slurry	5		
Magnesium long chain alkaryl sulfonate (C11–C50)	34	MAS	
Magnesium long chain alkyl phenate sulfide (C8–C20)	34	MPS	
Magnesium long chain alkyl salicylate (C11+)	34	MLS	
•Magnesium nonyl phenol sulfide, <i>see</i> Magnesium long chain alkyl phenate sulfide (C8–C20).		MPS
•Magnesium sulfonate, <i>see</i> Magnesium long chain sulfonate (C11–C50)	34	MSE	MAS
Maleic anhydride	11	MLA	
Mercaptobenzothiazol, sodium salt solution	5		SMB
Mesityl oxide	218	MSO	
Metam sodium solution	7	MSS	SMD
Methacrylic acid	4	MAD	
Methacrylic resin in Ethylene dichloride	14	MRD	
Methacrylonitrile	15	MET	
Methane	31	MTH	
3-Methoxy-1-butanol	20		
3-Methoxybutyl acetate	34	MOA	
N-(2-Methoxy-1-methyl ethyl)-2-ethyl-6-methyl chloroacetanilide, <i>see</i> Metolachlor		
1-Methoxy-2-propyl acetate	34	MPO	
•Methoxy triglycol	40	MTG	
Methyl acetate	34	MTT	
Methyl acetoacetate	34	MAE	
Methyl acetylene, Propadiene mixture	30	MAP	
Methyl acrylate	14	MAM	
Methyl alcohol	220	MAL	
Methylamine solutions	7	MSZ	
Methyl amyl acetate	34	MAC	
•Methyl amyl alcohol	20	MAA	MIC
Methyl amyl ketone	18	MAK	
Methyl bromide	36	MTB	
Methyl butenol	20	MBL	
Methyl butyl ketone	18	MBK	
Methyl tert-butyl ether	241	MBE	
Methylbutynol	20	MBY	
3-Methyl butyraldehyde	19		
Methyl butyrate	34	MBU	
Methyl chloride	36	MTC	
Methylcyclohexane	31	MCY	
Methylcyclopentadiene dimer	30	MCK	
Methyl diethanolamine	8	MDE	MAB
2-Methyl-6-ethylaniline	9	MEN	
Methyl ethyl ketone	218	MEK	
2-Methyl-5-ethylpyridine	9	MEP	
Methyl formate	34	MFM	
N-Methylglucamine solution	43	MGC	
N-Methylglucamine solution (70% or less)	43	MGC	
Methyl heptyl ketone	18	MHK	
2-Methyl-2-hydroxy-3-butyne	20	MHB	
Methyl isoamyl ketone	18		MAK
•Methyl isobutyl carbinol, <i>see</i> Methyl amyl alcohol	20	MIC	MAA
Methyl isobutyl ketone	218	MIK	
Methyl methacrylate	14	MMM	
3-Methyl-3-methoxybutanol	20		
3-Methyl-3-methoxybutyl acetate	34		
Methyl naphthalene	32	MNA	
Methylolureas	19	MUS	
2-Methyl pentane	31		IHA
•2-Methyl-1-pentene, <i>see</i> Hexene	30	MPN	HEX
•4-Methyl-1-pentene, <i>see</i> Hexene	30	MTN	HEX
Methyl propyl ketone	18	MKE	
Methylpyridine	9		MPR/MPE/MPF
N-Methyl-2-pyrrolidone	29	MPY	
Methyl salicylate	34	MES	
alpha-Methylstyrene	30	MSR	
Metolachlor	34	MCO	
Milk	43		
Mineral spirits	33	MNS	
Molasses	20		
Molasses residue	0		
Monochlorodifluoromethane	36	MCF	
Morpholine	27	MPL	

TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Motor fuel antiknock compounds containing lead alkyls	10	MFA	
Myrcene	30	MRE	
Naphtha:			
Aromatic	33		
Coal tar solvent	33		
•Cracking fraction	233	NCT	
Heavy	33		
Paraffinic	33		
Petroleum	33	PTN	
Solvent	33	NSV	
Stoddard solvent	33	NSS	
Varnish Makers' and Painters'	33	NVM	
Naphthalene	32	NTM	
Naphthalene sulfonic acid-formaldehyde copolymer, sodium salt solution	0	NFS	
Naphthalene sulfonic acid, sodium salt solution	34	NSA	
Naphthenic acid	4	NTI	
Naphthenic acid, sodium salt solution	43	NTS	
Neodecanoic acid	4	NEA	
Nitrating acid	10	NIA	
Nitric acid (70% or less)	3	NCD	NAC
Nitric acid (greater than 70%)	10		
Nitrobenzene	42	NTB	
•o-Nitrochlorobenzene, see Chloronitrobenzene	42	CNO/CNP	
Nitroethane	42	NTE	
o-Nitrophenol	1,20	NTP	NIP/NPH
Nitropropane	42	NPM	NPN/NPP
Nitropropane, Nitroethane mixture	42		NNM/NNL
Nitrotoluene	42	NIT	NIE/NTT/NTR
Nonane	31	NAX	NAN
Nonanoic acid	4	NNA	NAI/NIN
Nonanoic, Tridecanoic acid mixture	4	NAT	
•Nonene	30	NOO	NON/NNE
Nonyl acetate	34	NAE	
•Nonyl alcohol	220	NNS	NNI/NNN/DBC
Nonyl methacrylate	14	NMA	
Nonyl phenol	21	NNP	
•Nonyl phenol (ethoxylated)	40	NPE	NPE
Nonyl phenol poly(4-12)ethoxylates	40	NPE	AKS/NPS
•Nonyl phenol sulfide solution, see Alkyl phenol sulfide (C8-C40)	0		
Noxious Liquid Substance, n.o.s. (NLS's)	30		
1-Octadecene	10	ODD	
Octadecenoamide	31	OAX	IOO/OAN
Octane	4	OAY	OOA/EHO
•Octanoic acid	220	OCX	IOA/OTA/EHX
Octanol	30	OTX	OTE
Octene	34	OAF	OAE
n-Octyl acetate	220	OCX	IOA/OTA
•Octyl alcohol, see Octanol	19	OAL	IOC/OLX/EHA
•Octyl aldehyde	34	ODA	
Octyl decyl adipate	234	ONE	AKN
•Octyl nitrate, see Alkyl(C7-C9) nitrates	21		
Octyl phenol	34		DAH
Octyl phthalate, see Dialkyl(C7-C13)phthalates			
Oil, edible:			
Beechnut	34	OBN	VEO
•Castor	34	OCA	VEO
Cocoa butter	34	OCB	VEO
•Coconut	234	OCC	VEO
Cod liver	34	OCL	AFN
•Corn	34	OCO	VEO
•Cottonseed	34	OCS	VEO
•Fish	234	OFS	AFN
Groundnut	34	OGN	VEO
Hazelnut	34	OHN	VEO
•Lard	34	OLD	AFN
Maize	34		VEO/OCO
Nutmeg butter	34	ONB	VEO
•Olive	34	OOL	VEO
•Palm	234	OPM	VEO
•Palm kernel	34	OPO	VEO
•Peanut	34	OPN	VEO

TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Poppy	34	OPY	VEO
Poppy seed	34		VEO
Raisin seed	34	ORA	VEO
•Rapeseed	34	ORP	VEO
•Rice bran	34	ORB	VEO
•Safflower	34	OSF	VEO
Salad	34	OSL	VEO
Sesame	34	OSS	VEO
•Soya bean	34	OSB	VEO
•Sunflower seed	34	OSN	VEO
•Tucum	34	OTC	VEO
•Vegetable	34	OVG	VEO
Walnut	34	OWN	VEO
Oil, fuel:			
No. 1	33	OON	
No. 1-D	33	OOD	
No. 2	33	OTW	
No. 2-D	33	OTD	
No. 4	33	OFR	
No. 5	33	OFV	
No. 6	33	OSX	
Oil, misc:			
Aliphatic	33		
Animal	34	OMA	AFN
Aromatic	33		
Clarified	33	OCF	
Coal	33		
Coconut oil, fatty acid methyl ester	34	OCM	
Cotton seed oil, fatty acid	34	CFY	
Crude	33	OIL	
Diesel	33	ODS	
Gas, high pour	33		
Gas, low pour	33		
Gas, low sulfur	33		
Heartcut distillate	33		
Lanolin	34	OLL	AFN
Linseed	33	OLS	
Lubricating	33	OLB	
Mineral	33	OMN	
Mineral seal	33	OMS	
Motor	33	OMT	
•Neatsfoot	33	ONF	AFN
Oiticica	34	OOI	
Palm oil, fatty acid methyl ester	34	OPE	
Penetrating	33	OPT	
Perilla	34	OPR	
Pilchard	34	OPL	AFN
Pine	33	OPI	
Residual	33		
Road	33	ORD	
Rosin	33	ORN	
Seal	34		
Soapstock	34	OIS	
•Soybean (epoxidized)	34		EVO
•Sperm	33	OSP	AFN
Spindle	33	OSD	
Tall	34	OTL	
Tall, fatty acid	234	TOF	
Transformer	33	OTF	
Tung	34	OTG	
Turbine	33	OTB	
Wood	34		
Olefin/Akyl ester copolymer (molecular weight 2000+)	34	OCP	
Olefin mixtures	30		OFX/OFY
alpha-Olefins (C6–C18) mixtures	30	OAM	
•Olefins (C13+)	30		
Oleic acid	34	OLA	
Oleum	120	OLM	
Oleylamine	10	OLY	
Oxyalkylated alkyl phenol formaldehyde	33		
Palm kernel acid oil	34	PNO	

TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Palm kernel acid oil, methyl ester	34	PNF	
•Palm kernel oil, fatty acid, <i>see</i> Palm kernel acid oil	
•Palm kernel oil, fatty acid methyl ester, <i>see</i> Palm kernel acid oil, methyl ester	
Palm stearin	34	PMS	
•n-Paraffins (C10–C20), <i>see</i> n-Alkanes (C10+)	31	PFN	
Paraldehyde	19	PDH	
Pentachloroethane	36	PCE	
•Pentadecanol, <i>see</i> Alcohols (C13+)	20	PDC	ALY
1,3-Pentadiene	30	PDE	PDN
Pentaethylenehexamine	7	PEN	
Pentaethylenehexamine, Tetraethylpentamine mixture	7	PEP	
Pentane	31	PTY	IPT/PTA
Pentanoic acid	4	POC	
Pentene	30	PTX	PTE
Pentene, Miscellaneous hydrocarbon mixture	230		
Pentyl aldehyde	19		
n-Pentyl propionate	34	PPE	
Perchloroethylene	36	PER	
Petrolatum	33	PTL	
Phenol	21	PHN	
1-Phenyl-1-xylyl ethane	32	PXE	
Phosphoric acid	1	PAC	
Phosphorus	10		PPW/PPR/PPB
Phthalic anhydride	11	PAN	
Phthalate based polyester polyol	20	PBE	
alpha-Pinene	30	PIO	
beta-Pinene	30	PIP	
•Pinene	30	PIN	PIO/PIP
•Pine oil	33	PNL	OPI
Polyalkyl(C18–C22) acrylate in Xylene	14	PIX	
Polyalkylene glycol butyl ether, <i>see</i> Poly(2–8)alkylene glycol monoalkyl(C1–C6) ether.	40	PGB	PAG
Poly(2–8)alkylene glycol monoalkyl(C1–C6) ether	40	PAG	
Poly(2–8)alkylene glycol monoalkyl(C1–C6) ether acetate	34	PAF	
Polyalkylene glycols, Polyalkylene glycol monoalkyl ethers mixtures	40	PPX	
Polyalkylene oxide polyol	20	PAO	
Polyalkyl methacrylate (C1–C20)	14	PMT	
Polyaluminum chloride solution	1		
Polybutadiene, hydroxyl terminated	20		
Polybutene	30	PLB	
Polybutenyl succinimide	10	PBS	
Poly(2+) _n cyclic aromatics	32	PCA	
Polydimethylsiloxane	34		
Polyether (molecular weight 2000+)	41	PYR	
Polyethylene glycol	40		
Polyethylene glycol dimethyl ether	40		
•Polyethylene glycol monoalkyl ether, <i>see</i> Poly(2–8)alkylene glycol monoalkyl(C1–C6) ether.	40	PEE	PAG
Polyethylene polyamines	27	PEB	
Polyferric sulfate solution	34	PSS	
Polyglycerine, Sodium salts solution (containing less than 3% Sodium hydroxide)	220	PGT	GCR
Polyglycerol	20		
Poly(4+) _n isobutylene	30		
Poly(methylene polyphenyl isocyanate)	12	PPI	
Poly(methylsiloxy)	34		
Polyolefin (molecular weight 300+)	30		
Polyolefin amide alkeneamine (C28+)	7	POD	
Polyolefin amide alkeneamine borate (C28–C250)	34	PAB	
Polyolefin amide alkeneamine/Molybdenum oxysulfide mixture	7		
Polyolefin amide alkeneamine polyol	7	PAP	
Polyolefinamine in alkyl(C2–C4)benzenes	7	POF	
Polyolefin anhydride	11	PAR	
Polyolefin ester (C28–C250)	34	POS	
Polyolefin phenolic amine (C28–C250)	7	PPH	
Polyolefin phosphorosulfide, barium derivative (C28–C250)	34	PPS	
Poly(20)oxyethylene sorbitan monooleate	34	PSM	
Polypropylene	30	PLP	
Poly(5+) _n propylene	30	PLQ	
Polypropylene glycol	40	PGC	
Polypropylene glycol methyl ether	40	PGM	
•Polysiloxane	34		DMP

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TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Potassium chloride solution	43	PCS	(DRB)
Potassium hydroxide solution	² 5		CPS
Potassium oleate	34	POE	
Potassium polysulfide, Potassium thiosulfide solution (41% or less)	0	PTG	
Potassium thiosulfate solution	43	PTF	
Propane	31	PRP	
Propanil, Mesityl oxide, Isophorone mixture	7	PMI	
Propanolamine	8	PAX	MPA/PLA
Propionaldehyde	19	PAD	
Propionic acid	4	PNA	
Propionic anhydride	11	PAH	
Propionitrile	37	PCN	
•n-Propoxypropanol, see Propylene glycol monoalkyl ether	40	PXP	PGE
Propyl acetate	34		IAC/PAT
Propyl alcohol	² 20		IPA/PAL
Propylamine	7		IPP/PRA/IPO
Propylbenzene	32	PBY	PBZ/CUM
n-Propyl chloride	36	PRC	
iso-Propylcyclohexane	31	IPX	
Propylene	30	PPL	
Propylene-butylene copolymer	30	PBP	
Propylene carbonate	34		
Propylene dimer	30	PDR	
Propylene glycol	² 20	PPG	
Propylene glycol n-butyl ether, see Propylene glycol monoalkyl ether	40	PGD	PGE
•Propylene glycol ethyl ether, see Propylene glycol monoalkyl ether	40	PGY	PGE
•Propylene glycol methyl ether, see Propylene glycol monoalkyl ether	40	PME	PGE
Propylene glycol methyl ether acetate	34	PGN	
Propylene glycol monoalkyl ether	40	PGE	PME/PGY
Propylene glycol phenyl ether	40	PGP	
Propylene glycol propyl ether, see Propylene glycol monoalkyl ether	40		PGE
Propylene oxide	16	POX	
Propylene tetramer	30	PTT	
Propylene trimer	30	PTR	
Propyl ether	41		IPE/PRE
•Pseudocumene, see Trimethylbenzene	32		TME/TRE
Pyridine	9	PRD	
Pyridine bases	9	PRB	
Rosin oil	33	ORN	
Rosin soap (disproportionated) solution	43	RSP	
•Rum, see Alcoholic beverages	20		
Sewage sludge	43		
Silica slurry	43		
Sludge, treated	43		
Sodium acetate, Glycol, Water mixture (not containing Sodium hydroxide)	² 34	SAO	SAP
Sodium acetate, Glycol, Water mixture (containing Sodium hydroxide)	5	SAP	SAO
Sodium acetate solution	34	SAN	
Sodium alkyl sulfonate solution	43	SSU	
Sodium aluminate solution	5	SAU	
Sodium aluminosilicate slurry	34		
Sodium benzoate solution	34	SBN	
Sodium borohydride, Sodium hydroxide solution	5	SBX	SBH/SBI
Sodium carbonate solutions	5	SCE	
Sodium chlorate solution	^{1,2} 0	SDD	SDC
Sodium cyanide solution	5	SCS	SCN
Sodium dichromate solution	^{1,2} 0	SDL	SCR
Sodium dimethyl naphthalene sulfonate solution	² 34		DNS
Sodium hydrogen sulfide, Sodium carbonate solution	² 0	SSS	
Sodium hydrogen sulfite solution	43	SHX	
Sodium hydrosulfide solution	² 5	SHR	
Sodium hydrosulfide, Ammonium sulfide solution	² 5	SSA	
Sodium hydroxide solution	² 5		CSS
Sodium hypochlorite solution	5	SHP	SHC
Sodium long chain alkyl salicylate (C13+)	34	SLS	
Sodium 2-mercaptopbenzothiazol solution	5	SMB	
Sodium naphthalene sulfonate solution	34	SNS	
Sodium naphthenate solution, see Naphthenic acid, sodium salt solution	5		
Sodium nitrite solution	5	SNI	SNT
Sodium petroleum sulfonate	33	SPS	
Sodium polyacrylate solution	² 43		
Sodium salt of Ferric hydroxyethylethylenediaminetriacetic acid solution	43	STA	FHX

TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Sodium silicate solution	243	SSN	SSC
Sodium sulfide, Hydrosulfide solution	1,20		SSH/SSI/SSJ
Sodium sulfide solution	43	SDR	
Sodium sulfite solution	43	SUP	SUS
•Sodium tartrates, Sodium succinates solution	43	STM	
Sodium thiocyanate solution	1,20	STS	SCY
Sorbitol solutions	20		SBT
Soyabean oil (epoxidized)	34		OSC/EVO
•Stearic acid, see Fatty acids (saturated, C13+)	34	SRA	FAD
Stearyl alcohol	20		
Styrene	30	STY	STX
Sulfolane	39	SFL	
Sulfohydrocarbon (C3–C88)	33	SFO	
Sulfohydrocarbon, long chain (C18+) alkylamine mixture	7	SFX	
Sulfonated polyacrylate solutions	243		
Sulfur	10	SXX	
Sulfuric acid	22	SFA	
Sulfuric acid, spent	2	SAC	
Tall oil	34	OIL	
Tall oil fatty acid, barium salt	20	TOB	
Tall oil soap (disproportionated) solution	43	TOS	
Tallow	234	TLO	
Tallow fatty acid	234	TFD	
•Tallow fatty alcohol, see Alcohols (C13+)	20	TFA	ALY
Tallow nitrile	37	TAN	
1,1,2,2-Tetrachloroethane	36	TEC	
•Tetradecanol, see Alcohols (C13+)	20	TTN	ALY
•Tetradecene, see the olefins entires	30	TTD	
Tetradecylbenzene	32	TDB	AKB
Tetraethylene glycol	40	TTG	
Tetraethylenepentamine	7	TTP	
Tetrahydrofuran	41	THF	
Tetrahydronaphthalene	32	THN	
•1,2,3,5-Tetramethylbenzene, see Tetramethylbenzene	32	TTB	TTC
Tetramethylbenzene	32	TTC	TTB
Tetrapropylbenzene, see Alkyl(C9+)benzenes	32		AKB
Tetrasodium salt of EDTA solution	43		EDS
Titanium tetrachloride	2	TTT	
Toluene	32	TOL	
Toluenediamine	9	TDA	
Toluene diisocyanate	12	TDI	
o-Tolidine	9	TLI	
•Triarylphosphate, see Triisopropylated phenyl phosphates	34		TPL
Tributyl phosphate	34	TBP	
1,2,4-Trichlorobenzene	36	TCB	
1,1,1-Trichloroethane	236	TCE	
1,1,2-Trichloroethane	36	TCM	
Trichloroethylene	236	TCL	
1,2,3-Trichloropropane	36	TCN	
1,1,2-Trichloro-1,2,2-trifluoroethane	36	TTF	
Tricresyl phosphate	34		TCO/TCP
•Tridecane, see n-Alkanes (C10+)	31	TRD	
Tridecanoic acid	34		
•Tridecanol, see Alcohols (C13+)	20	TDN	ALY
•Tridecene, see Olefins (C13+)	30	TDC	
Tridecyl acetate	34	TAE	
Tridecylbenzene	32	TRB	AKB
Triethanolamine	28	TEA	
Triethylamine	7	TEN	
Triethylbenzene	32	TEB	
Triethylene glycol	40	TEG	
Triethylene glycol butyl ether, see Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	40		PAG
Triethylene glycol butyl ether mixture	40		
Triethylene glycol di-(2-ethylbutyrate)	34		TGD
Triethylene glycol ether mixture	40		
•Triethylene glycol ethyl ether, see Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	40	TGE	PAG
Triethylene glycol methyl ether, see Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	40	TGY	PAG
Triethylenetetramine	27	TET	
Triethyl phosphate	34	TPS	
Triethyl phosphite	234	TPI	

TABLE I—ALPHABETICAL LIST OF CARGOES—Continued

Chemical name	Group No.	CHRIS code	Related CHRIS codes
Trifluralin in Xylene	18	TFX	
Triisobutylene	30	TIB	
Triisooctyl trimellitate	34		
Triisopropanolamine	8	TIP	
Triisopropanolamine salt of 2,4-Dichlorophenoxyacetic acid solution	43		DTI
Triisopropylated phenyl phosphates	34	TPL	
Trimethylacetic acid	4	TA	
Trimethylamine solution	7	TMT	
Trimethylbenzene	32	TRE	TME/TMB/TMD
Trimethylhexamethylenediamine (2,2,4- and 2,4,4-)	7	THA	
Trimethylhexamethylene diisocyanate (2,2,4- and 2,4,4-)	12	THI	
Trimethylol propane polyethoxylate	20	TPR	
•2,2,4-Trimethyl pentanediol-1,3-diisobutyrate, see 2,2,4-Trimethyl-1,3-pantanediol diisobutyrate			
2,2,4-Trimethyl-1,3-pantanediol diisobutyrate	34	TMQ	
2,2,4-Trimethyl-1,3-pantanediol-1-isobutyrate	34	TMP	
2,2,4-Trimethyl-3-pentanol-1-isobutyrate	34		
Trimethyl phosphite	234	TPP	
1,3,5-Trioxane	241	TRO	
Triphenylborane, Caustic soda solution	5	TPB	
•Tripropylene, see Propylene trimer	30		PTR
Tripropylene glycol	40	TGC	
•Tripropylene glycol methyl ether, see Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	40	TGM	PAG
Trisodium nitritotriacetate	34		
Trisodium phosphate solution	5	TSP	
Trixylol phosphate, see Trixylol phosphate	34	TRP	TRP
Trixylol phosphate	34		
Turpentine	30	TPT	
Undecanoic acid	4	UDA	
Undecanol, see Undecanol alcohol	20		UND
Undecene	30	UDC	
Undecyl alcohol	20	UND	
Undecylbenzene	32	UDB	AKB
Urea, Ammonium mono- and di-hydrogen phosphate, Potassium chloride solution	0	UPX	
Urea, Ammonium nitrate solution (containing Ammonia)	6	UAS	
•Urea, Ammonium nitrate solution (not containing Ammonia)	43	UAT	ANU
Urea, Ammonium phosphate solution	43	UAP	
Urea solution	43		URE
Valeraldehyde	19	VAK	IVA/VAL
Vanillin black liquor	5	VBL	
Vegetable acid oils and distillates, n.o.s.	34	VAO	
Vegetable oils, n.o.s.	34	VEO	
Vegetable protein solution	43		
Vinyl acetate	13	VAM	
Vinyl chloride	35	VCM	
Vinyl ethyl ether	13	VEE	
Vinyldiene chloride	35	VCI	
Vinyl neodecanate	13	VND	
Vinyltoluene	13	VNT	
Water	43		
Waxes:			
Candelilla	34	WAX	
Carnauba	34	WDC	
Paraffin	34	WCA	
Petroleum	31	WPF	
White spirit (low (15–20%) aromatic)	33		
Xylene	33	WSL	WSP
Xylenols	32	XLX	XLM/XLO/XLP
Zinc alkaryl dithiophosphate (C7–C16)	21	XYL	
Zinc alkenyl carboxamide	34	ZAD	
Zinc alkyl dithiophosphate (C3–C14)	10	ZAA	
Zinc bromide, Calcium bromide solution, see Drilling brine (containing Zinc salts)	34	ZAP	DZB
	43		

Items with a bullet (•) or in boldface are changes per CGD 92–100.

¹ Because of very high reactivity or unusual conditions of carriage or potential compatibility problems, this product is not assigned to a specific group in the Compatibility Chart. For additional compatibility information, contact Commandant (G-MSO), U.S. Coast Guard, 2100 Second Street, SW., Washington, D.C. 20593–0001. Telephone (202) 267–1577.

² See Appendix I—Exceptions to the Chart.

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[CGD 92-100, 59 FR 17011, Apr. 11, 1994, as amended by CGD 94-902, 60 FR 34042, June 29, 1995; CGD 95-900, 60 FR 34045, 34046, 34047, 34049 June 29, 1995; CGD 95-900, 60 FR 39267, Aug. 2, 1995; CGD 96-041, 61 FR 50731, Sept. 27, 1996]

TABLE II—GROUPING OF CARGOES

0. UNASSIGNED CARGOES

Acetone cyanohydrin ^{1,2}
 Alkylbenzenesulfonic acid ^{1,2}
 Aluminium chloride, Hydrochloric acid solution ¹
 Ammonium hydrogen phosphate solution ¹
 Ammonium nitrate solution ¹
 Ammonium thiocyanate, Ammonium thiosulfate solution ¹
 Benzenesulfonyl chloride ^{1,2}
 gamma-Butyrolactone ^{1,2}
 Chlorine ¹
 Chlorosulfonic acid ¹
 Decyloxytetrahydro-thiophene dioxide ²
 2,4-Dichlorophenoxyacetic acid, Dimethylamine salt solution ^{1,2}
 Dimethylamine salt of 2,4-Dichlorophenoxyacetic acid solution ^{1,2}
 Diphenylol propane-Epichlorohydrin resins ¹
 Dodecylbenzenesulfonic acid ^{1,2}
 Dodecyl hydroxypropyl sulfide ²
 Ethylene oxide ¹
 Fluorosilicic acid
 2-Hydroxyethyl acrylate ^{1,2}
 Lactic acid ²
 Long chain alkaryl sulfonic acid (C16-C60) ²
 Magnesium chloride solution ^{1,2}
 Molasses residue ¹
 Motor fuel antiknock compounds containing Lead alkyls ¹
 Naphthalene sulfonic acid-formaldehyde copolymer, sodium salt solution ¹
 Nitrating acid ¹
 Nitric acid (greater than 70%) ¹
 o-Nitrophenol ^{1,2}
 Noxious Liquid Substance, n.o.s. (NLS's) ¹
 Oleum ^{1,2}
 Phosphorus ¹
 Phthalate based polyester polyol ²
 Potassium polysulfide, Potassium thiosulfide solution (41% or less)
 Sodium chlorate solution ^{1,2}
 Sodium dichromate solution ^{1,2}
 Sodium hydrogen sulfide, Sodium carbonate solution ^{1,2}
 Sodium sulfide, Hydrosulfide solution ^{1,2}
 Sodium thiocyanate solution ^{1,2}
 Sulfur ¹
 Tall oil fatty acid, barium salt ²
 Urea, Ammonium mono- and di-hydrogen phosphate, Potassium chloride solution

1. NON-OXIDIZING MINERAL ACIDS

Di-(2-ethylhexyl)phosphoric acid
 Ferric chloride solution

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Fluorosilicic acid
 Hydrochloric acid
 Phosphoric acid
 Polyaluminum chloride solution

2. SULFURIC ACIDS

Sulfuric acid ²
 Sulfuric acid, spent
 Titanium tetrachloride

3. NITRIC ACID

Ferric nitrate, Nitric acid solution
 Nitric acid (70% or less)

4. ORGANIC ACIDS

Acetic acid ²
 Acrylic acid ²
 Butyric acid
 Cashew nut shell oil (untreated)
 Citric acid
 Chloroacetic acid solution
 Chloropropionic acid
 Decanoic acid
 2,2-Dichloropropionic acid
 2,2-Dimethyloctanoic acid
 2-Ethylhexanoic acid
 Formic acid ²
 Glyoxylic acid
 n-Heptanoic acid
 Hexanoic acid
 2-Hydroxy-4-(methylthio)butanoic acid
 Methacrylic acid
 Naphthenic acid
 Neodecanoic acid
 Nonanoic acid
 Nonanoic, Tridecanoic acid mixture
 Octanoic acid
 Pentanoic acid
 Propionic acid
 Trimethylacetic acid
 Undecanoic acid

5. CAUSTICS

Ammonium sulfide solution
 Calcium hypochlorite solutions
 Caustic potash solution ²
 Caustic soda solution ²
 Cresylate spent caustic
 Cresylic acid, sodium salt solution
 Kraft black liquor
 Kraft pulping liquors
 Mercaptobenzothiazol, sodium salt solution
 Potassium hydroxide solution ²
 Sodium acetate, Glycol, Water mixture (containing Sodium hydroxide)
 Sodium aluminate solution
 Sodium borohydride, Sodium hydroxide solution
 Sodium carbonate solutions
 Sodium cyanide solution
 Sodium hydrosulfide solution ²
 Sodium hydrosulfide, Ammonium sulfide solution ²
 Sodium hydroxide solution ²
 Sodium hypochlorite solution

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Sodium 2-mercaptopbenzothiazol solution
Sodium naphthenate solution
Sodium nitrite solution
Triphenylborane, Caustic soda solution
Trisodium phosphate solution
Vanillin black liquor

6. AMMONIA

Ammonia, anhydrous
Ammonia, aqueous
Ammonium hydroxide (28% or less Ammonia)
Ammonium nitrate, Urea solution (containing Ammonia)
Urea, Ammonium nitrate solution (containing Ammonia)

7. ALIPHATIC AMINES

N-Aminoethylpiperazine
Butylamine
Calcium long chain alkyl phenolic amine (C8-C40)
Cyclohexylamine
Dibutylamine
Diethylamine²
Diethylenetriamine
Diisobutylamine
Diisopropylamine
Dimethylamine
Dimethylamine solution
N,N-Dimethylcyclohexylamine
Di-n-propylamine
Diphenylamine, reaction product with 2,2,4-Trimethylpentene
Diphenylamines, alkylated
Dodecylamine, Tetradecylamine mixture²
Dodecyldimethylamine, Tetradecyldimethylamine mixture
Ethylamine²
Ethylamine solution
N-Ethyl-n-butylamine
N-Ethyl cyclohexylamine
Ethylenediamine²
2-Ethyl hexylamine
Hexamethylenediamine solution
Hexamethylenetetramine
Hexamethylenetetramine solutions
Hexamethylenimine
Isophorone diamine
Long chain polyetheramine in alkyl(C2-C4)benzenes
Metam sodium solution
Methylamine solutions
Morpholine²
Oleylamine
Pentaethylenehexamine
Pentaethylenehexamine, Tetraethylenepentamine mixture
Polyalkyl methacrylate (C1-C20)
Polyethylene polyamines²
Polyolefin amide alkeneamine (C28+)
Polyolefin amide alkeneamine/Molybdenum oxysulfide mixture
Polyolefin amide alkeneamine polyol
Polyolefinamine in alkyl(C2-C4)benzenes
Polyolefin phenolic amine (C28-C250)

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Propanil, Mesityl oxide, Isophorone mixture
Propylamine
Sulfohydrocarbon, long chain (C18+) alkylamine mixture
Tetraethylenepentamine
Triethylamine
Triethylenetetramine²
Trimethylamine solution
Trimethylhexamethylene diamine (2,2,4-and 2,4,4-)

8. ALKANOLAMINES

2-(2-Aminoethoxy)ethanol
Aminoethyl diethanolamine, Aminoethyl ethanolamine solution
Aminoethyl ethanolamine
2-Amino-2-methyl-1-propanol
Diethanolamine
Diethylaminoethanol
Diethyllethanolamine
Diisopropanolamine
Dimethyllethanolamine
Ethanolamine
Propanolamine
Triethanolamine²
Triisopropanolamine

9. AROMATIC AMINES

Aniline
4-Chloro-2-methylphenoxyacetic acid, Dimethylamine salt solution
2,6-Diethylaniline
Dimethylamine salt of 4-Chloro-2-methylphenoxyacetic acid solution
2,6-Dimethylaniline
2-Ethyl-6-methyl-N-(1'-methyl-2-methoxyethyl)aniline
2-Methyl-6-ethyl aniline
2-Methyl-5-ethyl pyridine
Methyl pyridine
3-Methylpyridine
N-Methyl-2-pyrrolidone²
Pyridine
Pyridine bases
Toluenediamine
p-Toluidine

10. AMIDES

Acrylamide solution
Alkenyl(C11+)amide
N,N-Dimethylacetamide
N,N-Dimethylacetamide solution
Dimethylformamide
Formamide
Octadecenoamide

11. ORGANIC ANHYDRIDES

Acetic anhydride
Alkenylsuccinic anhydride
Maleic anhydride
Phthalic anhydride
Polyolefin anhydride
Propionic anhydride

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12. ISOCYANATES	Methyl amyl ketone Methyl butyl ketone Methyl butyl ketone Methyl diethanolamine Methyl ethyl ketone ² Methyl heptyl ketone Methyl isoamyl ketone Methyl isobutyl ketone ² Methyl propyl ketone Trifluralin in Xylene
Diphenylmethane diisocyanate Isophorone diisocyanate Polymethylene polyphenyl isocyanate Toluene diisocyanate Trimethylhexamethylene diisocyanate (2,2,4- and 2,4,4-)	
13. VINYL ACETATE	19. ALDEHYDES
Vinyl acetate Vinyl ethyl ether Vinyl neodecanate Vinyl toluene	Acetaldehyde Acrolein ² Butyraldehyde Crotonaldehyde ² Decaldehyde Ethylhexaldehyde 2-Ethyl-3-propylacrolein ² Formaldehyde, Methanol mixtures ² Formaldehyde solution ² Furfural Glutaraldehyde solution Glyoxal solutions 3-Methyl butyraldehyde Methylolureas Octyl aldehyde Paraldehyde Pentyl aldehyde Propionaldehyde Valeraldehyde
14. ACRYLATES	20. ALCOHOLS, GLYCOLS
Butyl acrylate Butyl methacrylate Butyl methacrylate, Decyl methacrylate, Cetyl-Eicosyl methacrylate mixture Cetyl-Eicosyl methacrylate mixture Decyl acrylate Dodecyl methacrylate Dodecyl-Pentadecyl methacrylate mixture Ethyl acrylate 2-Ethylhexyl acrylate Ethyl methacrylate Methacrylic resin in Ethylene dichloride Methyl acrylate Methyl methacrylate Nonyl methacrylate Polyalkyl(C18 - C22) acrylate in Xylene Polyalkyl methacrylate (C1-C20)	Acrylonitrile-Styrene copolymer dispersion in Polyether polyol Alcoholic beverages Alcohol polyethoxylates Alcohol polyethoxylates, secondary Alcohols (C13+) Amyl alcohol Behenyl alcohol Brake fluid base mixtures Butyl alcohol ² Butylene glycol ² Cetyl-Stearyl alcohol Choline chloride solutions Cyclohexanol Decyl alcohol ² Diacetone alcohol ² Diisobutyl carbinol 2,2-Dimethylpropane-1,3-diol Dodecanol Dodecyl alcohol Ethoxylated alcohols, C11-C15 2-Ethoxyethanol Ethyl alcohol ² Ethyl butanol Ethylene chlorohydrin Ethylene cyanohydrin Ethylene glycol ² 2-Ethylhexanol Furfuryl alcohol ² Glycerine ² Glycerine, Dioxanediethanol mixture Glycerol monooleate Heptanol
15. SUBSTITUTED ALLYLS	
Acrylonitrile ² Allyl alcohol ² Allyl chloride 1,3-Dichloropropene Dichloropropene, Dichloropropane mixtures Methacrylonitrile	
16. ALKYLENE OXIDES	
Butylene oxide Ethylene oxide, Propylene oxide mixtures Propylene oxide	
17. EPICHLOROHYDRIN	
Chlorhydrins Epichlorohydrin	
18. KETONES	
Acetone ² Acetophenone Amyl methyl ketone Butyl heptyl ketone Camphor oil Cyclohexanone Cyclohexanone, Cyclohexanol mixtures ² Diisobutyl ketone Ethyl amyl ketone Epoxy resin Ketone residue Isophorone ² Mesityl oxide ²	

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Hexamethylene glycol	Butylene
Hexanol	1,5,9-Cyclododecatriene
Hexylene glycol	1,3-Cyclopentadiene dimer
Hydroxy terminated polybutadiene	Cyclopentene
Lauryl polyglucose (50% or less)	Decene
3-Methoxy-1-butanol	Dicyclopentadiene
Methyl alcohol ²	Diisobutylene
Methyl amyl alcohol	Dipentene
Methyl butenol	Dodecene
Methylbutynol	Ethylene
2-Methyl-2-hydroxy-3-butyne	Ethylene-Propylene copolymer
Methyl isobutyl carbinol	Ethyldene norbornene ²
3-Methyl-3-methoxybutanol	1-Heptene
Molasses	Hexene
Nonyl alcohol ²	Isoprene
Octanol ²	Latex (ammonia (1% or less) inhibited)
Octyl alcohol ²	Methyl acetylene, Propadiene mixture
Pentadecanol	Methylcyclopentadiene dimer
Polyalkylene oxide polyol	2-Methyl-1-pentene
Polybutadiene, hydroxyl terminated	4-Methyl-1-pentene
Polyglycerol	alpha-Methyl styrene
Polyglycerine, Sodium salts solution (containing less than 3% Sodium hydroxide) ²	Myrcene
Propyl alcohol ²	Nonene
Propylene glycol ²	1-Octadecene
Rum	Octene
Sorbitol solutions	Olefin mixtures
Stearyl alcohol	alpha-Olefins (C6 - C18) mixtures
Tallow fatty alcohol	alpha-Olefins (C13+)
Tetradecanol	1,3-Pentadiene
Tridecanol	Pentene
Trimethylol propane polyethoxylate	Pentene, Miscellaneous hydrocarbon mixture ²
Undecanol	alpha-Pinene
Undecyl alcohol	beta-Pinene
	Polybutene
	Poly(4+)-isobutylene
21. PHENOLS, CRESOLS	Polyolefin (molecular weight 300+)
Benzyl alcohol	Polypropylene
Carbolic oil	Poly(5+)-propylene
Creosote ²	Propylene
Cresols	Propylene-butylene copolymer
Cresylic acid	Propylene dimer
Cresylic acid dephenolized	Propylene tetramer
Cresylic acid, tar	Propylene trimer
2,4-Dichlorophenol	Styrene
Dodecyl phenol	Tetradecene
o-Ethylphenol	Tridecene
Long chain alkylphenate/phenol sulfide mixture	Triisobutylene
Nonyl phenol	Tripropylene
Octyl phenol	Turpentine
Phenol	Undecene
Xylenols	
	31. PARAFFINS
22. CAPROLACTAM SOLUTIONS	Alkanes (C6-C9)
Caprolactam solution	n-Alkanes (C10+)
	iso- & cyclo-Alkanes (C10-C11)
23-29. UNASSIGNED	iso- & cyclo-Alkanes (C12+)
	Butane
30. OLEFINS	Cycloheptane
Amylene	Cyclohexane
Aryl polyolefin (C11-C50)	Cyclopentane
Butadiene	Decane
Butadiene, Butylene mixtures (cont. Acetylenes)	Dodecane
Butene	Ethane
Butene oligomer	Ethyl cyclohexane
	Heptane
	Hexane ²

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Methane	Calcium sulfonate, Calcium carbonate, Hydrocarbon solvent mixture
Methylcyclohexane	
2-Methyl pentane	Coal tar
Nonane	Coal tar pitch
Octane	Decahydronaphthalene
Pentane	Diphenyl, Diphenyl ether
Propane	Distillates, flashed feed stocks
iso-Propylcyclohexane	Distillates, straight run
Tridecane	Drilling mud (low toxicity) (<i>if flammable or combustible</i>)
Waxes:	Gas oil, cracked
Paraffin	Gasoline blending stock, alkylates
32. AROMATIC HYDROCARBONS	Gasoline blending stock, reformates
Alkyl(C3-C4)benzenes	Gasolines:
Alkyl(C5-C8)benzenes	Automotive (<i>not over 4.23 grams lead per gal.</i>)
Alkyl(C9+)benzenes	Aviation (<i>not over 4.86 grams lead per gal.</i>)
Alkyl acrylate-Vinyl pyridine copolymer in Toluene	Casinghead (<i>natural</i>)
Alkylbenzene, Alkyllindane, Alkyllindene mixture (each C12-C17)	Polymer
Benzene	Straight run
Benzene hydrocarbon mixtures (having 10% Benzene or more)	Jet Fuels:
Benzene, Toluene, Xylene mixtures	JP-4
Butylbenzene	JP-5
Butyl phenol, Formaldehyde resin in Xylene	JP-8
Butyl toluene	Kerosene
Cumene	Mineral spirits
Cymene	Naphtha:
Decylbenzene	Coal tar solvent
Dialkyl(C10 - C14) benzenes	Petroleum
Diethylbenzene	Solvent
Diisopropylbenzene	Stoddard solvent
Diisopropyl naphthalene	Varnish Makers' and Painters'
Diphenyl	Oil, fuel:
Dodecylbenzene	No. 1
Dodecyl xylene	No. 1-D
Ethylbenzene	No. 2
Ethyl toluene	No. 2-D
Isopropylbenzene	No. 4
Methyl naphthalene	No. 5
Naphthalene	No. 6
1-Phenyl-1-xylyl ethane	Oil, misc:
Poly(2+)cyclic aromatics	Aliphatic
Propylbenzene	Aromatic
Pseudocumene	Clarified
Tetradecylbenzene	Coal
Tetrahydronaphthalene	Crude
1,2,3,5-Tetramethylbenzene	Diesel
Toluene	Gas, high pour
Tridecylbenzene	Heartcut distillate
Triethylbenzene	Linseed
Trimethylbenzene	Lubricating
Undecylbenzene	Mineral
Xylene	Mineral seal
33. MISCELLANEOUS HYDROCARBON MIXTURES	Motor
Alachlor technical	Neatsfoot
Alkylbenzenesulfonic acid, sodium salt solutions	Penetrating
Alkyl dithiothiadiazole (C6-C24)	Pine
Asphalt blending stocks, roofers flux	Rosin
Asphalt blending stocks, straight run residue	Sperm
Aviation alkylates	Spindle
	Turbine
	Residual
	Road
	Transformer
	Oxyalkylated alkyl phenol formaldehyde
	Petrolatum
	Pine oil

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Sodium petroleum sulfonate
 Sulfohydrocarbon (C3-C88)
 Waxes:
 Petroleum
 White spirit (low (15-20%) aromatic)

34. ESTERS

Alkane (C14-C17) sulfonic acid, sodium salt solution
 Alkyl(C8+)-amine, Alkenyl (C12+) acid ester mixture
 Alkyl ester copolymer (C6-C18)
 Alkyl(C7-C9) nitrates²
 Alkyl phenol sulfide (C8-C40)
 Amyl acetate
 Animal and Fish oils, n.o.s.
 Animal and Fish acid oils and distillates, n.o.s.
 Barium long chain alkaryl sulfonate (C11-C50)
 Barium long chain alkyl(C8-C14)phenate sulfide
 Benzene tricarboxylic acid trioctyl ester
 Benzyl acetate
 Butyl acetate
 Butyl benzyl phthalate
 n-Butyl butyrate
 Butyl formate
 iso-Butyl isobutyrate
 n-Butyl propionate
 Calcium alkyl(C9)phenol sulfide, polyolefin phosphorosulfide mixture
 Calcium long chain alkaryl sulfonate (C11-C50)
 Calcium long chain alkyl phenate (C8-C40)
 Calcium long chain alkyl phenate sulfide (C8-C40)
 Calcium long chain alkyl salicylate (C13+)
 Calcium nitrate, Magnesium nitrate, Potassium chloride solution
 Cobalt naphthenate in solvent naphtha
 Coconut oil, fatty acid
 Cottonseed oil, fatty acid
 Cyclohexyl acetate
 Decyl acetate
 Dialkyl(C7 - C13) phthalates
 Dibutyl hydrogen phosphonate
 Dibutyl phthalate
 Diethylene glycol butyl ether acetate
 Diethylene glycol ethyl ether acetate
 Diethylene glycol methyl ether acetate
 Diethylene glycol phthalate
 Di-(2-ethylhexyl)adipate
 Di-(2-ethylhexyl)phthalate
 Diethyl phthalate
 Diethyl sulfate
 Diheptyl phthalate
 Dihexyl phthalate
 Di-n-hexyl adipate
 Diisobutyl phthalate
 Diisodecyl phthalate
 Diisobornyl adipate
 Diisobornyl phthalate
 Diisooctyl phthalate
 Dimethyl adipate
 Dimethylcyclicsiloxane hydrolyzate
 Dimethyl glutarate

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Dimethyl hydrogen phosphite²
 Dimethyl naphthalene sulfonic acid, sodium salt solution²
 Dimethyl phthalate
 Dimethyl polysiloxane
 Dimethyl succinate
 Dinonyl phthalate
 Dioctyl phthalate
 Dipropylene glycol dibenzoate
 Ditridecyl phthalate
 2-Dodecenylsuccinic acid, dipotassium salt solution
 Diundecyl phthalate
 2-Ethoxyethyl acetate
 Ethyl acetate
 Ethyl acetoacetate
 Ethyl butyrate
 Ethylene carbonate
 Ethylene glycol acetate
 Ethylene glycol butyl ether acetate
 Ethylene glycol diacetate
 Ethylene glycol ethyl ether acetate
 Ethylene glycol methyl ether acetate
 Ethyl-3-ethoxypropionate
 Ethyl hexyl phthalate
 Ethyl propionate
 Ethyl propionate
 Fatty acids (saturated, C13+)
 Glycerol polyalkoxylate
 Glycerol triacetate
 Glycidyl ester of C10 trialkyl acetic acid
 Glycidyl ester of tridecylacetic acid
 Heptyl acetate
 Hexyl acetate
 Lauric acid
 Lecithin (*soyabean*)
 Magnesium long chain alkaryl sulfonate (C11-C50)
 Magnesium long chain alkyl phenate sulfide (C8-C20)
 Magnesium long chain alkyl salicylate (C11+)
 3-Methoxybutyl acetate
 1-Methoxy-2-propyl acetate
 Methyl acetate
 Methyl acetoacetate
 Methyl amyl acetate
 Methyl butyrate
 Methyl formate
 3-Methyl-3-methoxybutyl acetate
 Methyl salicylate
 Metolachlor
 Naphthalene sulfonic acid, sodium salt solution (40% or less)
 Nonyl acetate
 n-Octyl acetate
 Octyl decyl adipate
 Oil, edible:
 Beechnut
 Castor
 Cocoa butter
 Coconut²
 Cod liver
 Corn
 Cotton seed
 Fish²
 Groundnut

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Hazelnut	Soyabean oil (epoxidized)
Lard	Stearic acid
Lanolin	Tall oil
Nutmeg butter	Tallow ²
Olive	Tallow fatty acid ²
Palm ²	Tributyl phosphate
Palm kernel	Tricresyl phosphate
Peanut	Tridecanoic acid
Poppy	Tridecyl acetate
Poppy seed	Triethylene glycol di-(2-ethylbutyrate)
Raisin seed	Triethyl phosphate
Rapeseed	Triethyl phosphite ²
Rice bran	Triisooctyl trimellitate ²
Safflower	Triisopropylated phenyl phosphates
Salad	2,2,4-Trimethyl-1,3-pentanediol disobutyrate
Sesame	2,2,4-Trimethyl-1,3-pentanediol-1-isobutyrate
Soya bean	2,2,4-Trimethyl-3-pentanol-1-isobutyrate
Sunflower	Trimethyl phosphite ²
Sunflower seed	Trisodium nitrilotriacetate
Tucum	Trixylyl phosphate
Vegetable	Trixylenyl phosphate
Walnut	Vegetable acid oils and distillates, n.o.s.
<i>Oil, misc:</i>	Vegetable oils, n.o.s.
Animal	Waxes:
Coconut oil, fatty acid methyl ester	Carnauba
Cotton seed oil, fatty acid	Zinc alkaryl dithiophosphate (C7-C16)
Lanolin	Zinc alkyl dithiophosphate (C3-C14)
Palm kernel oil, fatty acid methyl ester	
Palm oil, methyl ester	
Pilchard	
Perilla	
Soapstock	
Soyabean (epoxidized)	
Tall	
Tall, fatty acid ²	
Tung	
Olefin/Akyl ester copolymer (molecular weight 2000+)	
Oleic acid	35. VINYL HALIDES
Palm kernel acid oil	Vinyl chloride
Palm kernel acid oil, methyl ester	Vinylidene chloride
Palm stearin	
n-Pentyl propionate	
Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether acetate	36. HALOGENATED HYDROCARBONS
Polydimethylsiloxane	Benzyl chloride
Polyferric sulfate solution	Carbon tetrachloride
Polymethylsiloxane	Chlorinated paraffins (C10 - C13)
Poly(20)oxyethylene sorbitan monooleate	Chlorinated paraffins (C14 - C17)
Polysiloxane	Chlorobenzene
Polyolefin amide alkeneamine borate (C28-C250)	Chlorodifluoromethane
Polyolefin ester (C28-C250)	Chloroform
Polyolefin phosphorusulfide, barium derivative (C28-C250)	Chlorotoluene
Potassium oleate	Dichlorobenzene
Propyl acetate	Dichlorodifluoromethane
Propylene carbonate	1,1-Dichloroethane
Propylene glycol methyl ether acetate	1,6-Dichlorohexane
Sodium acetate, Glycol, Water mixture (not containing Sodium hydroxide) ²	2,2'-Dichloroisopropyl ether
Sodium acetate solution	Dichloromethane
Sodium benzoate solution	Dichloropropane
Sodium dimethyl naphthalene sulfonate solution ²	Ethyl chloride
Sodium long chain alkyl salicylate (C13+)	Ethylene dibromide
Sodium naphthalene sulfonate solution	Ethylene dichloride ²

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37. NITRILES	Triethylene glycol ether mixture Triethylene glycol ethyl ether Triethylene glycol methyl ether Tripropylene glycol Tripropylene glycol methyl ether
Acetonitrile	
Adiponitrile	
Lactonitrile solution	
Propionitrile	
Tallow nitrile	
38. CARBON DISULFIDE	
Carbon disulfide	
39. SULFOLANE	
Sulfolane	
40. GLYCOL ETHERS	
Diethylene glycol ²	
Diethylene glycol butyl ether	
Diethylene glycol dibutyl ether	
Diethylene glycol diethyl ether	
Diethylene glycol ethyl ether	
Diethylene glycol methyl ether	
Diethylene glycol n-hexyl ether	
Diethylene glycol phenyl ether	
Diethylene glycol propyl ether	
Dipropylene glycol	
Dipropylene glycol butyl ether	
Dipropylene glycol methyl ether	
Ethoxy triglycol	
Ethylene glycol hexyl ether	
Ethylene glycol methyl butyl ether	
Ethylene glycol monoalkyl ethers	
Ethylene glycol tert-butyl ether	
Ethylene glycol butyl ether	
Ethylene glycol dibutyl ether	
Ethylene glycol ethyl ether	
Ethylene glycol isopropyl ether	
Ethylene glycol methyl ether	
Ethylene glycol phenyl ether	
Ethylene glycol phenyl ether, Diethylene glycol phenyl ether mixture	
Ethylene glycol propyl ether	
Hexaethylene glycol	
Methoxy triglycol	
Nonyl phenol (ethoxylated)	
Nonyl phenol poly(4-12)ethoxylates	
Oil, misc:	
Polyalkylene glycol butyl ether	
Polyalkylene glycols, Polyalkylene glycol monoalkyl ethers mixtures	
Polyethylene glycols	
Polyethylene glycol dimethyl ether	
Poly(2-8)alkylene glycol monoalkyl(C1-C6) ether	
Polyethylene glycol monoalkyl ether	
Polypropylene glycol methyl ether	
Polypropylene glycols	
n-Propoxypropanol	
Propylene glycol monoalkyl ether	
Propylene glycol ethyl ether	
Propylene glycol methyl ether	
Propylene glycol n-butyl ether	
Propylene glycol phenyl ether	
Propylene glycol propyl ether	
Tetraethylene glycol	
Triethylene glycol	
Triethylene glycol butyl ether	
Triethylene glycol butyl ether mixture	
41. ETHERS	
Alkaryl polyether (C9-C20)	
Butyl ether	
2,2'-Dichloroethyl ether	
Diethyl ether	
Diglycidyl ether of Bisphenol A	
Diglycidyl ether of Bisphenol F	
Dimethyl furan	
1,4-Dioxane	
Diphenyl ether	
Diphenyl ether, Diphenyl phenyl ether mixture	
Ethyl ether	
Long chain alkaryl polyether (C11-C20)	
Methyl-tert-butyl ether ²	
Propyl ether	
Tetrahydrofuran	
1,3, 5-Trioxane	
Polyether (molecular weight 2000+)	
42. NITROCOMPOUNDS	
o-Chloronitrobenzene	
Dinitrotoluene	
Nitrobenzene	
Nitroethane	
Nitropropane	
Nitropropane, Nitroethane mixture	
Nitrotoluene	
43. MISCELLANEOUS WATER SOLUTIONS	
Aluminum sulfate solution ²	
2-Amino-2-hydroxymethyl-1,3-propanediol solution	
Ammonium bisulfite solution ²	
Ammonium nitrate, Urea solution (not containing Ammonia)	
Ammonium polyphosphate solution	
Ammonium sulfate solution	
Ammonium thiosulfate solution	
Sulfonated polyacrylate solutions ²	
Calcium bromide solution	
Calcium chloride solution	
Clay slurry	
Corn syrup	
Dextrose solution	
2,4-Dichlorophenoxyacetic acid, Diethanolamine salt solution	
2,4-Dichlorophenoxyacetic acid, Triisopropanolamine salt solution ²	
Diethanolamine salt of 2,4- Dichlorophenoxyacetic acid solution	
Diethylenetriamine pentaacetic acid, pentasodium salt solution	
Dodecyl diphenyl ether disulfonate solution	
Drilling brine (containing Calcium, Potassium, or Sodium salts)	
Drilling brine (containing Zinc salts)	
Drilling mud (low toxicity) (<i>if non-flammable or non-combustible</i>)	

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Ethylenediaminetetraacetic acid, tetrasodium salt solution
 Ethylene-Vinyl acetate copolymer emulsion
 Ferric hydroxyethylethylenediamine triacetic acid, trisodium salt solution²
 Fish solubles (*water based fish meal extracts*)
 Fructose solution
 Fumaric adduct of Rosin, water dispersion
 Hexamethylenediamine adipate solution
 N-(Hydroxyethyl)ethylene diamine triacetic acid, trisodium salt solution
 Kaolin clay slurry
 Latex, liquid synthetic
 Lignin liquor
 Liquid Streptomyces solubles
 N-Methylglucamine solution
 N-Methylglucamine solution (70% or less)
 Naphthenic acid, sodium salt solution
 Potassium chloride solution
 Potassium thiosulfate solution
 Rosin soap (disproportionated) solution
 Sewage sludge, treated
 Sodium alkyl sulfonate solution
 Sodium hydrogen sulfite solution
 Sodium polyacrylate solution²
 Sodium salt of Ferric hydroxyethylethylenediamine triacetic acid solution
 Sodium silicate solution²
 Sodium sulfide solution
 Sodium sulfite solution
 Sodium tartrates, Sodium succinates solution
 Sulfonated polyacrylate solutions²
 Tall oil soap (disproportionated) solution
 Tetrasodium salt of EDTA solution
 Triisopropanolamine salt of 2,4-Dichlorophenoxyacetic acid solution
 Urea, Ammonium nitrate solution (not containing Ammonia)
 Urea, Ammonium phosphate solution
 Urea solution
 Vegetable protein solution (hydrolysed)
 Water

FOOTNOTES TO TABLE II

¹Because of very high reactivity or unusual conditions of carriage or potential compatibility problems, this product is not assigned to a specific group in the Compatibility Chart. For additional compatibility information, contact Commandant (G-MSO), U.S. Coast Guard, 2100 Second Street, SW., Washington, DC 20593-0001. Telephone (202) 267-1577.

²See Appendix I—Exceptions to the Chart.

[CGD 88-100, 54 FR 40012, Sept. 29, 1989, as amended by CGD 88-100, 55 FR 17276, Apr. 24, 1990; CGD 92-100, 59 FR 17025, Apr. 11, 1994; CGD 94-902, 60 FR 34043, June 29, 1995; CGD 95-900, 60 FR 34049, 34050, June 29, 1995; CGD 96-041, 61 FR 50731, Sept. 27, 1996]

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APPENDIX I TO PART 150—EXCEPTIONS TO THE CHART

(a). The binary combinations listed below have been tested as prescribed in Appendix III and found not to be dangerously reactive. These combinations are exceptions to the Compatibility Chart (Figure 1) and may be stowed in adjacent tanks.

Member of reactive group	Compatible with
Acetone (18)	Diethylenetriamine (7)
Acetone cyanohydrin (0)	Acetic acid (4)
Acrylonitrile (15)	Triethanolamine (8)
1,3-Butylene glycol (20)	Morpholine (7)
1,4-Butylene glycol (20)	Ethylamine (7)
gamma-Butyrolactone (0)	Triethanolamine (8)
Caustic potash, 50% or less (5).	N-Methyl-2-pyrrolidone (9)
Caustic soda, 50% or less (5)	Isobutyl alcohol (20)
	Ethyl alcohol (20)
	Ethylene glycol (20)
	Isopropyl alcohol (20)
	Methyl alcohol (20)
	iso-Octyl alcohol (20)
	Butyl alcohol (20)
	tert-Butyl alcohol, Methanol mixtures
	Decyl alcohol (20)
	iso-Decyl alcohol (20)
	Diacetone alcohol (20)
	Diethylene glycol (40)
	Ethyl alcohol (20)
	Ethyl alcohol (40%, whiskey) (20)
	Ethylene glycol (20)
	Ethylene glycol, Diethylene glycol mixture (20)
	Ethyl hexanol (Octyl alcohol) (20)
	Methyl alcohol (20)
	Nonyl alcohol (20)
	iso-Nonyl alcohol (20)
	Propyl alcohol (20)
	Propylene glycol (20)
	Sodium chloride (0)
	iso-Tridecanol (20)
Dodecyl and Tetradecylamine mixture (7).	Tall oil, fatty acid (34)
Ethylenediamine (7)	Butyl alcohol (20)
	tert-Butyl alcohol (20)
	Butylene glycol (20)
	Creosote (21)
	Diethylene glycol (40)
	Ethyl alcohol (20)
	Ethylene glycol (20)
	Ethyl hexanol (20)
	Glycerine (20)
	Isononyl alcohol (20)
	Isophorone (18)
	Methyl butyl ketone (18)
	Methyl iso-butyl ketone (18)
	Methyl ethyl ketone (18)
	Propyl alcohol (20)
	Propylene glycol (20)
Oleum (0)	Hexane (31)
	Dichloromethane (36)
	Perchloroethylene (36)
1,2-Propylene glycol (20)	Diethylenetriamine (7)
	Polyethylene polyamines (7)
	Triethylenetriamine (7)
Sodium dichromate, 70% (0)	Methyl alcohol (20)

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Member of reactive group	Compatible with
Sodium hydrosulfide solution (5).	iso-Propyl alcohol (20)
Sulfuric acid (2)	Coconut oil (34) Coconut oil acid (34) Palm oil (34) Tallow (34)
Sulfuric acid, 98% or less (2)	Choice white grease tallow (34)

(b). The binary combinations listed below have been determined to be dangerously reactive, based on either data obtained in the literature or on laboratory testing which has been carried out in accordance with procedures prescribed in Appendix III. These combinations are exceptions to the Compatibility Chart (Figure 1) and may not be stowed in adjacent tanks.

Acetone cyanohydrin (0) is not compatible with Groups 1-12, 16, 17 and 22.

Acrolein (19) is not compatible with Group 1, Non-Oxidizing Mineral Acids.

Acrylic acid (4) is not compatible with Group 9, Aromatic Amines.

Acrylonitrile (15) is not compatible with Group 5 (Caustics).

Alkylbenzenesulfonic acid (0) is not compatible with Groups 1-3, 5-9, 15, 16, 18, 19, 30, 34, 37, and strong oxidizers.

Allyl alcohol (15) is not compatible with Group 12, Isocyanates.

Alkyl(C7-C9) nitrates (34) is not compatible with Group 1, Non-oxidizing Mineral Acids.

Aluminum sulfate solution (43) is not compatible with Groups 5-11.

Ammonium bisulfite solution (43) is not compatible with Groups 1, 3, 4, and 5.

Benzenesulfonyl chloride (0) is not compatible with Groups 5-7, and 43.

1,4-Butylene glycol (20) is not compatible with Caustic soda solution, 50% or less (5).

gamma-Butyrolactone (0) is not compatible with Groups 1-9.

Caustic soda solution, 50% or less (5) is not compatible with 1,4-Butylene glycol (20).

Crotonaldehyde (19) is not compatible with Group 1, Non-Oxidizing Mineral Acids.

Cyclohexanone, Cyclohexanol mixture (18) is not compatible with Group 12, Isocyanates.

2,4-Dichlorophenoxyacetic acid, Triisopropanolamine salt solution (43) is not compatible with Group 3, Nitric Acid.

2,4-Dichlorophenoxyacetic acid, Dimethylamine salt solution (0) is not compatible with Groups 1-5, 11, 12, and 16.

Dimethyl hydrogen phosphite (34) is not compatible with Groups 1 and 4.

Dimethyl naphthalene sulfonic acid, sodium salt solution (34) is not compatible with Group 12, Formaldehyde, and strong oxidizing agents.

Dodecylbenzenesulfonic acid (0) is not compatible with oxidizing agents and Groups 1, 2, 3, 5, 6, 7, 8, 9, 15, 16, 18, 19, 30, 34, and 37.

Ethylenediamine (7) is not compatible with Ethylene dichloride (36).

Ethylene dichloride (36) is not compatible with Ethylenediamine (7).

Ethyldiene norbornene (30) is not compatible with Groups 1-3 and 5-8.

2-Ethyl-3-propylacrolein (19) is not compatible with Group 1, Non-Oxidizing Mineral Acids.

Ferric hydroxyethylethylenediamine triacetic acid, Sodium salt solution (43) is not compatible with Group 3, Nitric acid.

Fish oil (34) is not compatible with Sulfuric acid (2).

Formaldehyde (over 50%) in Methyl alcohol (over 30%) (19) is not compatible with Group 12, Isocyanates.

Formic acid (4) is not compatible with Furfural alcohol (20).

Furfuryl alcohol (20) is not compatible with Group 1, Non-Oxidizing Mineral Acids and Formic acid (4).

2-Hydroxyethyl acrylate is not compatible with Groups 2, 3, 5-8 and 12.

Isophorone (18) is not compatible with Group 8, Alkanolamines.

Magnesium chloride solution (0) is not compatible with Groups 2, 3, 5, 6 and 12.

Mesityl oxide (18) is not compatible with Group 8, Alkanolamines.

Methacrylonitrile (15) is not compatible with Group 5 (Caustics).

Methyl tert-butyl ether (41) is not compatible with Group 1, Non-oxidizing Mineral Acids.

Naphtha, cracking fraction (33) is not compatible with strong acids, caustics or oxidizing agents.

o-Nitrophenol (0) is not compatible with Groups 2, 3, and 5-10.

Octyl nitrates (all isomers), see Alkyl(C7-C9) nitrates.

Oleum (0) is not compatible with Sulfuric acid (2) and 1,1,1-Trichloroethane (36).

Phthalate based polyester polyol (0) is not compatible with group 2, 3, 5, 7 and 12.

Pentene, Miscellaneous hydrocarbon mixtures (30) are not compatible with strong acids or oxidizing agents.

Polyglycerine, Sodium salts solution (20) is not compatible with Groups 1, 4, 11, 16, 17, 19, 21 and 22.

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Sodium acetate, Glycol, Water mixture (1% or less Sodium hydroxide) (34) is not compatible with Group 12 (Isocyanates).

Sodium chlorate solution (50% or less) (0) is not compatible with Groups 1-3, 5, 7, 8, 10, 12, 13, 17 and 20.

Sodium dichromate solution (70% or less) (0) is not compatible with Groups 1-3, 5, 7, 8, 10, 12, 13, 17 and 20.

Sodium dimethyl naphthalene sulfonate solution (34) is not compatible with Group 12, Formaldehyde and strong oxidizing agents.

Sodium hydrogen sulfide, Sodium carbonate solution (0) is not compatible with Groups 6 (Ammonia) and 7 (Aliphatic amines).

Sodium hydrosulfide (5) is not compatible with Groups 6 (Ammonia) and 7 (Aliphatic amines).

Sodium hydrosulfide, Ammonium sulfide solution (5) is not compatible with Groups 6 (Ammonia) and 7 (Aliphatic amines).

Sodium polyacrylate solution (43) is not compatible with Group 3, Nitric Acid.

Sodium salt of Ferric hydroxyethylethylenediamine triacetic acid solution (43) is not compatible with Group 3, Nitric acid.

Sodium silicate solution (43) is not compatible with Group 3, Nitric Acid.

Sodium sulfide, hydrosulfide solution (0) is not compatible with Groups 6 (Ammonia) and 7 (Aliphatic amines).

Sodium thiocyanate (56% or less) (0) is not compatible with Groups 1-4.

Sulfonated polyacrylate solution (43) is not compatible with Group 5 (Caustics).

Sulfuric acid (2) is not compatible with Fish oil (34), or Oleum (0).

Tallow fatty acid (34) is not compatible with Group 5, Caustics.

1,1,1-Trichloroethane (36) is not compatible with Oleum (0).

Trichloroethylene (36) is not compatible with Group 5, Caustics.

Triethyl phosphite (34) is not compatible with Groups 1, and 4.

Trimethyl phosphite (34) is not compatible with Groups 1 and 4.

1,3,5-Trioxane (41) is not compatible with Group 1 (non-oxidizing mineral acids) and Group 4 (Organic acids).

[CGD 88-100, 54 FR 40012, Sept. 29, 1989 as amended by CGD 88-100, 55 FR 17277, Apr. 24, 1990; CDG 92-100, 59 FR 17026, Apr. 11, 1994; CGD 94-902, 60 FR 34043, June 29, 1995; CGD 95-900, 60 FR 34050, June 29, 1995]

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APPENDIX II TO PART 150—EXPLANATION OF FIGURE 1

Definition of a hazardous reaction— As a first approximation, a mixture of two cargoes is considered hazardous when, under specified condition, the temperature rise of the mixture exceeds 25 °C or a gas is evolved. It is possible for the reaction of two cargoes to produce a product that is significantly more flammable or toxic than the original cargoes even though the reaction is non-hazardous from temperature or pressure considerations, although no examples of such a reaction are known at this time.

Chart format— There are different degrees of reactivity among the various cargoes. Many of them are relatively non-reactive: For example, aromatic hydrocarbons or paraffins. Others will form hazardous combinations with many groups: For example, the inorganic acids.

The cargo groups in the compatibility chart are separated into two categories: 1 through 22 are "Reactive Groups" and 30 through 43 are "Cargo Groups". Left unassigned and available for future expansion are groups 23 through 29 and those past 43. Reactive Groups contain products which are chemically the most reactive; dangerous combinations may result between members of different Reactive Groups and between members of Reactive Groups and Cargo Groups. Products assigned to Cargo Groups, however, are much less reactive; dangerous combinations involving these can be formed only with members of certain Reactive Groups. Cargo Groups do not react hazardously with one another.

Using the Compatibility Chart— The following procedure explains how the compatibility chart should be used to find compatibility information:

(1) Determine the group numbers of the two cargoes by referring to the alphabetical listing of cargoes and the corresponding groups (Table I). Many cargoes are listed under their parent names; unless otherwise indicated, isomers or mixtures of isomers of a particular cargo are assigned to the same group. For example, to find the group number for Isobutyl Alcohol, look under the parent name Butyl Alcohol. Similarly, the group number for para-Xylene is found under the entry Xylene. If a cargo cannot be found in this listing, contact the Coast Guard for a group determination (see § 150.140).

(2) If both group numbers are between 30 and 43 inclusive, the products are compatible and the chart need not be used.

(3) If both group numbers do not fall between 30 and 43 inclusive, locate one of the numbers on the left of the chart (Cargo Groups) and the other across the top (Reactive Groups). (Note that if a group number is between 30 and 43, it can only be found on the left side of the chart.) The box formed by

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the intersection of the column and row containing the two numbers will contain one of the following:

- (a) Blank—The two cargoes are compatible.
- (b) "X"—The two cargoes are not compatible.

(Note that reactivity may vary among the group members. Refer to Table I or Table II to find whether the products in question are referenced by a footnote which indicates that exceptions exist and are listed in Appendix I. Unless the combination is specifically mentioned in Appendix I, it is compatible.)

[CGD 75-59, 45 FR 70263, Oct. 23, 1980, as amended by CGD 83-047, 50 FR 33046, Aug. 16, 1985]

EXAMPLES

Combination	Groups	Compatible
Butyraldehyde/Acetic Acid	19/4	Yes.
Allyl Alcohol/Toluene Diisocyanate	15/12	No.
Decene/Ethyl Benzene	30/32	Yes.
Ethanolamine/Acetone	8/18	Yes.
Ammonia/Dimethylformamide	6/10	No.

APPENDIX III TO PART 150—TESTING PROCEDURES FOR DETERMINING EXCEPTIONS TO THE CHART**EXPERIMENTAL PROCEDURE FOR EVALUATING BINARY CHEMICAL REACTIVITY**

General safety precautions—Chemical reactivity tests have, by their nature, serious potential for injuring the experimenter or destroying equipment. The experimenter should 1) have knowledge of the magnitude of the reactivity to be expected, 2) use adequate facilities and protective equipment to prevent injury from splatter of materials or release of fumes, and 3) start on a small scale so that unexpected reactions can be safely contained. All tests should be performed in a well-ventilated laboratory hood provided with shields.

Testing chemicals other than liquids—The procedure outlined below was developed for chemicals which are liquids at ambient temperatures. If one or both chemicals are normally shipped at elevated temperatures, the same procedure may be followed except the chemicals are tested at their respective shipping temperatures and the oil bath in Step 3 is maintained at a level 25 °C above the higher temperature. This information is then indicated on the data sheet. If one of the chemicals is a gas at ambient temperatures, consult the Coast Guard for additional instructions before proceeding with the compatibility test.

Step 1

Objective—To determine if the test chemicals react violently and present a safety hazard in further tests.

Procedure—Place 0.5ml of one (A) of the test chemicals in a 25×150mm test tube. Clamp the test tube to a stand behind a safety shield (in a hood). Carefully add from a dropper 0.5ml of the other substance (B). Shake to induce mixing. If no immediate reaction occurs, retain the mixture for at least 10 minutes to check for a delayed reaction.

Results—If a violent reaction occurs, such as sputtering, boiling of reactants or release of fumes, record the results on the Data Sheet (appendix IV) and do not proceed to Step 2. If no reaction or a minor reaction occurs, proceed to Step 2.

Step 2

Objective—To determine the heat of reaction of two chemicals on mixing under specified conditions.

Procedure—These separate mixes of the proposed binary combination will be tested. These are 2 ml : 18 ml, 10 ml : 10 ml, and 18 ml : 2 ml, respectively, to result in a final mixture of about 20 ml in each case.

A reference-junctioned thermocouple is prepared by inserting two lengths of 20 gauge or finer iron-constantan or chromelalumel duplex thermocouple wire into glass capillary sheaths. The common wire of each probe is joined, while the other wire of each is connected to a strip-chart recorder. The thermocouple probe which produces a negative pen deflection upon warming is the reference junction and is placed in a test tube of water at ambient laboratory temperature. The other probe is placed near the bottom of a Dewar flask of about 300ml capacity, such that the thermocouple will be below the surface of the test mixture. The Dewar flask is equipped with a magnetic stirrer having a stirring bar coated with an inert material such as a fluorinated hydrocarbon.

Start the temperature recorder and stirrer. Deliver the test chemicals to the Dewar Flask simultaneously from separate graduated syringes. If an exothermic reaction occurs, continue the test until the maximum temperature is reached and begins to subside. If no apparent reaction occurs, continue the test for at least 30 minutes to check for a delayed reaction. Stop agitation and observe the mixture at five-minute intervals to determine if the mixture is miscible, if gases are evolved, or if other visible changes occur. In the interest of safety, a mirror can be used for these observations. Repeat the above test for the other mixture combinations.

Results—Record the results in the appropriate places on the Data Sheet. If no reaction occurs or if the temperature rise is less than 25 °C, proceed to Step 3. If the observed

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temperature rise exceeds 25 °C or gases are evolved, do not proceed to Step 3.

Step 3

Objective—To determine if exothermic reactions occur at temperatures up to 50 °C.

Procedure—If a non-hazardous reaction occurred in Step 2, the ratio of chemicals which resulted in the greatest temperature rise will be tested. Fresh chemicals will be used with a total volume for this test of about 10ml (a ratio of 1ml:9ml, 5ml:5ml, or 9ml:1ml). If no reaction was observed in Step 2, use a ratio of 5ml:5ml. Using the thermocouple prepared for Step 2, insert the reference probe into a 25×150mm test tube containing 10ml of water. Place the other probe into an empty test tube. Start the temperature recorder and add the two chemicals of the combination, one at a time, to the empty test tube. Lower the two test tubes into an

oil bath maintained at 50 ± 2 °C. Hold the samples in the oil bath until the maximum temperature differential is recorded, and in all cases at least 15 minutes. Observe the test mixture to determine if gases are evolved or if other visible changes occur. Follow prescribed safety precautions.

Results—Record the maximum differential temperature measured, the time required to reach this temperature, and any other observations in the proper space on the Data Sheet.

Send a copy of the Data Sheet for each binary chemical mixture tested to: Commandant (G-MSO), U.S. Coast Guard, Washington, DC 20593-0001.

[CGD 75-59, 45 FR 70263, Oct. 23, 1980, as amended by CGD 82-063b, 48 FR 4782, Feb. 3, 1983; CGD 83-047, 50 FR 33046, Aug. 16, 1985; CGD 88-070, 53 FR 34535, Sept. 7, 1988; CGD 96-041, 61 FR 50731, Sept. 27, 1996]

Appendix IV - Data sheet

CHEMICAL REACTIVITY TEST DATA

Chemicals:	A _____	B _____										
Synonyms:	_____											
Formula:	_____											
Description of Products:	<table border="1" style="width: 100%;"><tr><th style="text-align: center;">A</th><th style="text-align: center;">B</th></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table>		A	B								
A	B											
Manufacturer												
Sample Source												
Composition (by weight %)												
Inhibitors or Stabilizers												
Deviations from Prescribed Method (including special equipment)												

Step Number 1

Products miscible? _____ Gases evolved? _____

Other Observations:

Step Number 2

A/B Ratio:

	2/18	10/10	18/2
Initial Temperature			
Maximum ΔT			
Time to reach Max. Temp.			
Products miscible?			
Gases evolved?			
Other Observations			

Size of Dewar Flask (inside measurements): Width _____ mm Height _____ mm

Step Number 3

A/B Ratio

Oil Bath Temperature

Maximum ΔT

Time to reach Max. Temp.

Gases evolved?

Other Observations

Date of Test: _____

Submitting Organization: _____

Test Data Approved By: _____